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SIERRA CLUB BULLETIN

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The Frontispiece : Shiprock

The frontispiece is a reproduction of a lithograph from Report of the Exploring Expedition from Santa Fé, New Mexico, to the Junction of the Grand and Green Rivers, of the Great Colorado of the West, in 1859, under the Command of Capt. J. N. Macomb, Corps of Topographical Engineers, with Geological Report by Prof. J. S. Newberry, Washington, 1876. The title of the original plate is: "The Needles, Looking South-Westerly," J. J. Young, from a sketch by J. S. Newberry. The following description is on page 107 of the Report:

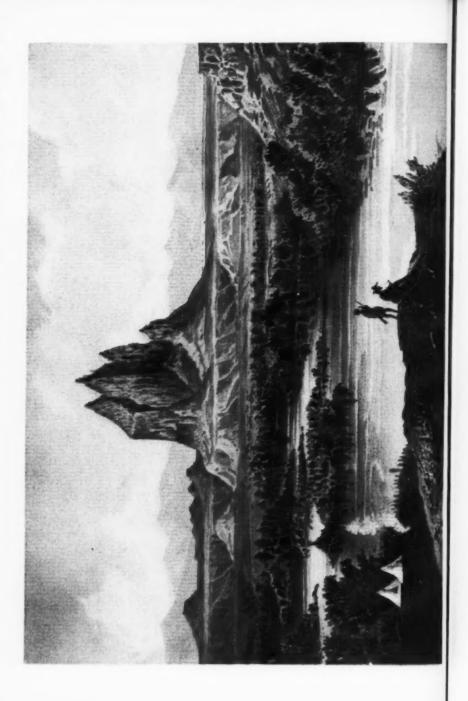
"A few miles north of Camp 39 is the southwestern corner of the Mesa Verde, which stretches from this point northward to our former trail, and, eastward, forms the north bank of the San Juan as far as the eye can reach. It has an altitude of 2,000 feet above camp, and presents, with its many detached buttes and pinnacles, its long and lofty walls, a most grand and imposing object. On the south side of the river, now quite near to us, stand out in strong relief the picturesque basaltic pinnacles of 'The Needles,' while further south the view is bounded by the high ridges of the Carisso and Tunecha Mountains.

"From Camp 40 we obtained a nearer and still better view of 'The Needles,' which is represented in the accompanying lithograph plate.

"This is a mass of erupted rock, rising with perpendicular sides from the middle of the valley. From all points, where seen by us, it has the appearance of an immense cathedral, of rich umber-brown color, terminating in two spires. Its altitude is about 1,700 feet above its base; above the river 2,262 feet. It is everywhere surrounded by stratified rocks, and its isolated position and peculiar form render its origin a matter of some little doubt. My conviction, however, is very decided that its remarkable relief is due to the washing away of the sediments which once surrounded it, and which formed the mold in which it was cast. In no other way can I imagine its vertical faces of 1,000 feet to have been formed."

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SIERRA CLUB BULLETIN



The First Ascent of Shiprock

BY BESTOR ROBINSON

E were encamped at the eastern base of Shiprock. Dinner was over. The embers of our sagebrush campfire sporadically came to life as gusts of desert wind fanned them into flame. We were all looking at the silhouette of Shiprock outlined against the evening sky. The wind-driven clouds gave the mountain the appearance of motion — it was no longer a mere rock in the desert but a full-rigged barkentine carrying triangular skysails atop its three masts. It must have been under conditions such as these that the early wanderers named the peak. Under the full glare of the desert sun it is not a ship, but just another fantastically shaped rock in a land filled with weird erosion forms.

I was jarred out of my nautical musings by Dave Brower's strictly military remark, "Seven o'clock tomorrow morning is our zero hour."

Looking backward it seemed that the military analogy was appropriate. Like an army staff we had developed our plans of attack deliberately and in detail. A mountain which had repulsed a dozen attempts could obviously not be conquered in any other way, if it could be conquered at all.

Dick Leonard had served as intelligence officer. He had corresponded with most of the earlier parties as to their routes, difficulties and suggestions. He had collected photographs from both climbers and non-climbers. These had been examined under the microscope

for routes and under a protractor for angles. A folder jammed with photos, notes, letters and maps was the result. Unfortunately, the necessity of attending an important National Park conference prevented his joining the climb.

Since climbers, more literally than armies, move on their stomachs, it was necessary that a small, but efficient, quartermaster corps be organized. Raffi Bedayan pulled the most tasty and nourishing foods off the shelves of his grocery. Florence Robinson enlisted as commissary sergeant.

A list of equipment finally emerged from a plethora of arguments and experiments. It included over one thousand feet of rope, dozens of pitons of varying shapes, thicknesses and lengths, and carabiners of three sizes, including the screw-jawed type for excessive strain. Lastly, and with some concern over the mountaineering ethics of our decision, we included several expansion bolts and stellite-tipped rock drills. We agreed with mountaineering moralists that climbing by the use of expansion bolts was taboo. We did believe, however, that safety knew no restrictive rules and that even expansion bolts were justified in order to secure the firm anchorage that would prevent a serious fall from imperiling the lives of the entire party.

Stories from previous climbing groups indicated that climate had much to do with hanging on to the precipitous faces of Shiprock. A Colorado team making a summer attempt had been tortured by baking temperatures and rock too hot to handle. The climbing capacity of our friends from the Southern California Chapter of the Sierra Club had been impaired by numbing winter cold. Since optimum climate seemed to arrive in October, so would we.

The climbing party had been organized on the theory that men who varied greatly in their special climbing abilities would make a stronger team than a group of good all-around climbers without such special abilities. Although three men would ordinarily have been considered ideal, the plans finally called for four men in order to be able to handle complicated anchorages and involved rope techniques. And so the party consisted of Dave Brower, John Dyer, Raffi Bedayan, and me.

Dave was the friction climber, the advocate of dynamic balance who seemed somehow to be able to move on slight discolorations of the rock. His long orangutan arms added to his normal height of six feet two made him valuable where holds were far apart.

Dyer was our lightweight lead man. Chipmunk-like, he could scramble up cracks; his lack of weight enabled him to make use of rotten rock and insecure pitons which could not be relied upon with safety by a heavier climber; and, if he should be unfortunate enough to fall, he would strain neither the rope nor the belayer holding it.

Bedayan, like Brower and Dyer, was an all-around climber. His particular ability, however, lay in the establishment of bombproof anchorages. With his two feet firmly planted, he was as immovable as a stubborn burro, and as reassuring for lead men.

Why I was included in the party still remains a mystery, unless it is explained by my love of ropes, pitons and other technical gear in their manifold combinations, which had earned me the doubtful appellation of "Rock Engineer."

Finally perfecting our military preparations, we had decided that the attack would have to be along the lines of methodical siege tactics, instead of the now famous blitzkrieg. In one important particular the military analogy was totally abandoned. There was no general, no captain — not even a lance corporal. The party was deliberately leaderless. The assumption of responsibility for decisions by the entire team does of course take time, but it brings into play the conflict of opinions without the presence of a dominating voice. In the long run, with an experienced party the judgment of such a "composite mind" is more likely to be right than the quick decisions of even a brilliant leader.

We had planned to devote our entire first day to scouting a route from the ground. It was an undeserved help and pleasure to be met by three Colorado climbers led by the redoubtable Mel Griffith, who had driven over several hundred miles of rough roads for the sole purpose of giving us firsthand the benefit of their experience with the rock. All day had been spent with them circling the peak, scanning its sculptured cliffs with glasses and telescopes and discussing the possibilities of each suggested route. The character of the problem was clear. We could ascend to the crest only by using the route which our Colorado frienc's had developed to the base of the north tower. This tower, unfortunately, lay astride the crest like a huge transverse fin. A broken basalt dike led to its north side. The main peak lay to the south. The all important question was how to get over, around or through this fin and into a large bowl facing east and formed by the three towers of Shiprock. The Col-

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oradans had tried to go over it using precarious holds formed by a two-foot lava dike. They had got only a third of the way up and that appeared, through the telescopes, to be the easiest third. The west edge of the tower did not have a crack or a hold for hundreds of feet. One might as well try to traverse the sheer face of Half Dome in Yosemite. A steep chimney leading easterly down from the crest to the top of the thousand-foot cliffs offered a bare hope that at closer range a traverse might be found where the north tower joined these cliffs. Through our glasses we were unable to pick a route, but we could not say that a route, consisting of tiny cracks and holds, could not be found on closer inspection. Unanimously we agreed that this was the only section offering a possibility. We decided to rub our noses into it the next day and see whether it would begrudgingly yield a way into the great bowl. Our preparations had thus been completed.

"Yes," Dave repeated, looking at Shiprock's silhouette against the sky, "Seven o'clock tomorrow morning is our zero hour. I wonder if we'll get over the top?" Being a navy man, I could not, from pride, restrain the contentious rejoinder, "This is a ship we are boarding — it's not an army maneuver. The job is to get around the fire control tower and climb the mainmast."

Came sleep — then breakfast, followed by the lugging of much gear around the stern of the ship to the western side — to the basalt dike which yielded a satisfactory, but at times airy, route to the bottom of the north tower. Halting only long enough to admire the work of our predecessors, as well as their ambition in attempting a frontal assault on its perpendicular wall, we went over the ridge to the east side and looked down toward camp. Three hundred feet below lay a sloping ledge which could be reached only by roping down a steep chimney. There was, however, no possibility of climbing back on the smooth-polished, holdless rock.

An improvised block and tackle appeared the appropriate technique. A loop of rope was securely anchored to two pitons, a large carabiner tied into the rope and the loop adjusted so that the carabiner would hang just beyond the lip of our ledge. Dave roped down, grumbling a bit when the large carabiner passed over his shoulder. John and I followed, but Raffi remained behind using up valuable calories maintaining body warmth against the snow-chilled winds which blew from the San Joaquin mountains. We were

not convinced that we could trust our hoist for the return journey and wanted a human donkey engine at the upper end of the rope.

We were now on a ledge as large as a city lot, sloping outward at an angle of thirty degrees to the brink of the eastern cliffs. This ledge continues, like the roof of a lean-to, almost the entire length of Shiprock. It forms the bottom of the great bowl and also the top of the south shoulder. The only difficulty is that this roof is cut into three sections without apparent provision for a connecting trail.

Reconnaissance indicated two possibilities, a high route which would land us in the bowl, and a low one which ended thirty feet under its lower lip. Although both contained extensive gaps of nothing, the lower route looked preferable except for its termination. Lack of piton cracks and adequate anchorage made it necessary to bring down Raffi, who by this time had made it clear that as a hoisting engine he was completely useless because of the cold. We did not feel concerned, however, so long as he could complain so loud and lustily.

Using all of our available rope, and even tying Raffi into the bottom of our hoist for better anchorage, we tackled the traverse. It was a friction problem, so Dave took the lead and demonstrated the effectiveness of his theory of dynamic balance by arriving at a secure ledge almost halfway around the tower. I came up and took over a fair sitting anchorage, aided by an insecure piton. Even such a piton is helpful when one is dangling his feet over a desert more than a thousand feet below. I knew I could not fall for I was tied to Raffi by a new rope, the breaking strain of which was over three thousand pounds; and Raffi was tied into the double hoisting rope. My mind told me that all was secure and that the worst that could happen would be a pendulum swing around the nose of the tower and onto the sloping ledge. This conclusion was irrefutable. I looked down on the desert, drove in a second, equally useless, piton and then, and not until then, felt secure.

Dave tried the high route but found it impossible. There was not even a prayerhold. (Next day he tried again but got no farther.) Dropping onto the lower route he found it better than expected, leading by way of a small, but secure, shelf to an eight-foot wall, which was climbed by use of a single piton.

Dave reported that if he could get over a thirty-foot cliff he would be in the giant bowl, but that he was figuratively at the end

of his rope. Looking at the single coil of the one hundred twenty foot climbing rope remaining in my hand, I called from my wellventilated anchorage that he was literally at the end of his rope and almost at the end of the day.

Johnny would have to lead over such a wall, so Raffi and I shuttled him over to Dave to have a look. Half of our composite mind was now in operation at the actual battle front. However, gnawing feelings in our midriffs and the lengthening shadow of Shiprock warned that it was time to return to camp. An hour later we were stowing away the excellent grub Florence had prepared.

The second day of climbing found all four of us at the base of the thirty-foot wall well before noon. We were on a broad but sloping shelf. Not a single secure piton crack could be found. Holding a fall from above would not be easy — so in went an ex-

pansion bolt.

Dave unsuccessfully attempted to detour the wall by way of a large crow's-nest. There was only one alternative left; a job of pure rock-engineering with two-man stands, pitons, foot slings and tension ropes. I had such an enjoyable time pounding pitons into the overhanging, outward sloping crack, that I hated to turn the job of going over to Johnny. However, prudence dictated that a two hundred pound man should not fall on questionable pitons, so Johnny took over. A delicate traverse on rotten rock, a second expansion bolt for safety, and Johnny reached the base of the second crack on our resisting wall. Then, back to camp. We had climbed only twelve feet that day. Too much time was being spent going to and from camp. The lure of good food and air mattresses was wrecking our mountaineering technique; at least so we concluded.

Next day, the third on the mountain, witnessed our carrying, over our well worn route, a light tent, extra grub, and six pints of water. Johnny finished his overhang, well enmeshed in ropes, pitons and slings. A few minutes later the entire party was in the great bowl scrambling over easy slopes to the south side of the thin transverse fin. There, alongside the same lava dike which witnessed Ormes' fall a year before, nature had fashioned an excellent bivouac cave. Surely it was not more than forty feet from the back of this cave to the opposite side where we had arrived more than three days before. Forty feet in three days. Raffi thought that next time we had best tunnel through.

Caching our equipment in the cave we hurried to scale the mainmast itself — the scantiness of our water supply or a cold night might disable the party for difficult climbing on the morrow.

After preliminary surveying of routes, the composite mind came to a two to two impasse. Dave and Johnny voted for the north side, the rest of us for the south arête with its overhanging horn. Dave, belayed by Raffi, performed in topnotch style. The north face begrudgingly yielded a perpendicular route to within seventy feet of the summit and then flatly refused to permit further progress. An overhang without a piton crack or a place for a two-man stand ended a valiant attempt.

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'Darkness had fallen before we arrived at our bivouac cave. Starvation rations were prescribed for dinner because digestion would waste much-needed water. Crawling into our light tent to conserve body heat, we spent a reasonably comfortable night on the hard rock, turning over, however, only by unanimous consent. The night was chilly, but we did not especially miss our sleeping bags.

The next morning the remainder of our water was partitioned under watchful eyes intent on democratic equality. After much scientific argument a little food to allay stomach emptiness was distributed and we were ready to tackle the mainmast. With husbandly solicitude I called down to Florence to inquire how she had survived the night. "Splendid," she replied, "only I had to kill two rattlers that insisted the camp was theirs."

Again we climbed to the upper edge of the great bowl at the base of the south arête of the main tower. Here I put a long line of pitons into the overhanging crack that wormed its way upward toward the horn. Johnny took over, threw his auxiliary rope over the horn and, after making sure he was anchored both above and below, climbed out over eighteen hundred feet of sheer western cliff and up the holdless side of the horn.

On the broad ridge atop the nose safe anchorage could be secured only by another expansion bolt. Up came the rest of the party. Dave took over the lead on the friction slopes ahead and soon we were all sitting on the summit of Shiprock. A rock cairn was built; a Sierra Club register with room for a thousand names was safely tucked away in its center.

"We've gone over the top," said Dave.

"No," I insisted, "we've climbed the mainmast."

Tripping High-1939

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BY DAVID R. BROWER

"FELL me. Do you really enjoy the mountains, trekking along like this with such a crowd? How many of you are there, anyway?"

It was Humphreys Basin, 1933. George Rockwood and I were passing the time of day with an old-time high-tripper whose curiosity was captured by two wandering knapsackers, worse for the wear. He was patient with my question. He must have heard it thirty times a year, for many years, and knew the answer by heart.

"Why, we never notice the crowd at all, except, perhaps, at meal times. The mountains, you know, are pretty big. It doesn't take long to put a skyline between yourself and the next party on the trail. We just stroll along when, where, and with whom we please. Of course, if you stop on the trail, the way we are now, you'll see a lot of people and pack-trains—and packers."

The old-timer paused to let his remarks penetrate our veneer of skepticism. He surveyed our chaotic commissary set-up. Then we sensed that he was scrutinizing us for signs of starvation.

"After all, what's so bad about crowds, anyway?" he resumed. "Why don't you stop by our camp for lunch tomorrow, since you're headed north. It's easy to find—just a little below the junction of French and Piute Creeks."

George thanked him and promised to take him up on that offer. We stopped by the Sierra Club camp next day. We met several Club notables, each of whom, it seemed, invited us to lunch. We marveled at the workings of the commissary, as its members industriously tore trees and vegetables apart. Then we fled up French Canyon, lunchless. Well off the trail we found refuge, far from the madding mules, crowds, and Dan Tachet's tempting pies. No. None of that for us. We were knapsackers, out to see the Sierra in a spartan way.

"The way they travel," concluded George, "they can't see the mountains for the people!"

Then came 1939. Another High Trip was on the way through Humphreys Basin. There they were again, well over two hundred, including packers and commissary. And I was there again, too,

but this time on the inside, looking out. Oliver Kehrlein, Dorothy Markwad, and I were bringing up the rear, naming flowers, trees, and birds that we knew, sympathizing with a beleaguered packer whose bronco mules had contrived a shipwreck where a boggy ford was softest. Still coasting on the reserve energy brought with us from civilization we had sped up the trail, unmindful of the altitude.

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All that first morning we wondered where they were - the high trippers who, but a few hours earlier, had thronged the iris-eyed meadow above North Lake. In the broad upland space of the lake basin tributary to Bishop Creek, in the vast timberline plateau of Humphreys Basin, two hundred persons were "lost." Our handful of stragglers, and a well traveled trail were all the evidence that a happy throng had passed. How thoroughly they had spread out! As we lunched at Piute Pass we could safely assume that the "jack-rabbit contingent" was already in Hutchinson Meadow, seven miles beyond. Others had stopped off in little grassy coves just off the trail, there to enjoy the congeniality of their own picked companions. Photographers had sought the secrets of Composition, rarely a follower of trails. Anglers had followed the most promising streams or had detoured to prove the reputation of the more remote lakes. The mountains had engulfed all of them — at least until dinner time. Most thoroughly lost of all were those hardy knapsackers who had forsaken the trail and the luxury of commissary cuisine. From the Pass they had headed for the highest albicaulis clump, close beneath towering Mount Humphreys. On the morrow they would christen the 1939 High Trip with an ascent of its lofty summit. Silently I wished I were with them, then took the downward trail.

Hutchinson Meadow was humming with activity. Everyone seemed to know not only what to do, but had already done it. Nature had co-operated generously with the management. Trees and rocks were in exactly the proper place for an ideal arrangement of stoves, stores, hot-water fires. Gale Siegel and his gallery were gathering more wood. Soon the serving line was in full swing; and although it was yet early in the trip, that phenomenon known as Mountain Appetite was already making its appearance. Well loaded plates and cups were carried off. Their owners settled in sociable clusters, on logs, rocks, or just grass, soon to unsettle and

return for seconds. The first wilderness banquet of the season was being thoroughly enjoyed. Then it was pleasant to relax in the campfire circle, while someone else stoked the fire, slowly to drowse into full susceptibility to the contagion of community good-feeling. Vanishing clouds, tinged by the sunset, or perhaps by the bright pine-wood flames rising to them . . . gay vivid greens in the branches overhead, swaying in the light and wind of the campfire . . . tiny twigs to scratch idle designs with, or to toss toward the flame where they slowly ignited . . . These impressions alone might have woven the spell of pleasure. But it took the reflected warmth of the circle of radiant faces to add a color of true happiness to the weave.

Across my mind flashed a picture of the Humphreys knapsackers. How are they? Too bad they're not down here enjoying this. Then I remembered our scorn of 1933. No, of course. I should be up there. But I wasn't convinced. The spartan spirit was slipping.

ROPES AND ROCK

The mountaineering department was always a busy institution. The back pocket of my jeans became frayed as the mountain records book slipped in and out, again and again. It all started at that Hutchinson campfire, when, after a noncommittal announcement of climbing possibilities in the region, I was surrounded by applicants for peaks. Fifteen minutes later the registrees had thinned out and I could see the campfire once more. Ten hours later mountaineers were hurrying away in all directions at once to Glacier Divide, The Pinnacles, Mount Hutchinson, unnamed peaks at the head of French Canyon. Not everyone traveled as far as signed agreements had indicated, but the department was not a stickler for legal form. The mountaineers always came back for more. The steadily mounting total of man-days of climbing was a marvel to behold. Quantitative climax was the mass ascent of Split Mountain in the third week, when, in two days, seventy-six signed the register. If they were at all disappointed, it was by the ease with which such a lofty summit — 14,051 feet — could be attained.

Other summits were less easily ascended, and were therefore more mercifully treated. Norman Clyde's party on Humphreys was small because of the knapsack camp requirement. He led slightly larger was

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parties on Darwin, Goddard, North Palisade. Two of those climbs were memorable for their length. To ascend Mount Goddard the party started from Muir Shelter, and, by a roundabout route, ended up in LeConte Canyon for a late dinner. The North Palisade party—largest ever to have climbed that difficult 14,000-foot summit—traveled fewer miles, but over more difficult ground. They enjoyed the sunset over Dusy Basin from a point high on the mountain, then hurried down to camp for an eleven o'clock dinner. Dark descents were in vogue that night. Another party got off the mountain still later.

There were new ascents, too. If there had been a consensus that the unclimbed peaks of the Sierra Nevada were bait only for young rock-climbers, this was quickly dispelled. With the first ascent of a peak on the western divide of French Canyon, Will Colby demonstrated that his many Sierran summers had not cooled his love of high places.

TRIPS AFIELD

Widespread but misconceived is the notion that one must be a mountaineer to enjoy High Trips. There were always plenty of activities, and always will be, for those who prefer comfort to conquest. The mountaineer may have called those partaking in urban activities — or better, inactivities — "meadoweers," but that detracted not a bit from their perfect mountain relaxation. A happy murmur of voices in some secluded woody alcove was sure indication of a tea party. Some were "formal." One could usually arrange an invitation. There would even be guest speakers. One thing was certain. There would be no exertion. Exercise was not, after all, necessary to stimulate the appetite. The commissary would gladly have explained that in this altitude desire for food was not periodic, but perpetual.

But perhaps you didn't like tea parties, wanting something more strenuous. A music circle was never hard to find. Violins, guitars, accordions, carefully carried from camp to camp by musical mules, played by talented musicians, were of course brought along essentially for campfire. But that didn't mean that one couldn't join a practice group in some sunny meadow. But why, you might wonder, is this considered a more strenuous activity? Well, at tea parties you could recline and relax so completely that you became

one with the grasses and pine needles and melodious streams. You could do this, that is, if you were willing to let someone else do the talking. But at a music fest it was almost impossible to avoid the urge to add your voice to the song. And there can be nothing abashed or abated about mountain singing.

The "sidewalk committee" gathering to supervise construction activity in a city has its counterpart on a High Trip. There are at least three activities to watch. Mules, meals, and medicine. Of course, watching mules is a bit sordid, smacking too much of the transportation industry. Lending moral support to Martin and his meals was apt to be a transitory affair. With tact that left her victims wondering how it had happened, Barbara Norris deftly transformed watchers into workers, who sang cheerfully over their vegetables. But medicine was always a safe sport to kibitz. Travis Winsor, his head nurse Betty Adams, and his portable hospital were more interesting to watch than doctors' biographies to read. Having observed his prestidigitatorial practices at campfires, everyone at one time or another gathered 'round to learn if blisters, burns, and abrasions might more easily be administered unto by a magician. The anaesthesia of the Winsor patter worked admirably on those who came for repairs. It worked even better on the observers, who were encouraged to participate in the Great Experiment of the trip. Pin-pricks in the ears — scores of them — were pointed evidence of the high-trippers' willingness to play guinea pig. He was counting corpuscles, the Doctor explained, but I still don't see how, amid the trials of his blisterkrieg, he had time to count all those corpuscles.

But this was supposed to describe trips farther afield than from the boudoir to commissary. Even to the most lethargic (we won't mention names) a constant round of teas and such would inevitably have proved monotonous. That's where the botanical, geological, and photographic trips came in. There were also streams and lakes to be navigated and fished. Oliver Kehrlein arranged an almost perpetual program of such activities, ably assisted by Charlie Webber, Ira Joralemon, Cedric Wright and other leaders in their respective sciences. I could never understand what the swimmers found in icy Sierra streams. As for the fishing, it must be admitted that those scorners of summits, the packers, had the inside track with Izaak Walton. They had, as each one of them must have stated

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on many occasions, lost nothing on the peaks; they also lost nothing in the lakes. If there were fish there, they caught them. The packers must easily have caught more Golden and Rainbow than all of the high-trippers combined. Paul Davis, Lucille Douglas, and Cliff Youngquist may, of course, reserve their right to question this bold assertion.

Geomorphology is a constant source of interest in high wilderness regions where man has not yet tried to change the face of Nature. The strength and beauty of mountain architecture must invariably challenge the curiosity. How, on Mount Darwin, could there be such a remarkably large summit plateau, with such an immense bulwark of massive granite supporting it; how could the southeastern pinnacle of the same mountain mass be higher than the plateau, when it appeared ready to totter? To what did those submerged stream channels, peculiar to the shallow upper ends of so many High Sierra lakes, owe their existence? There were many questions. Some we could answer. There was another question that we answered prematurely, not realizing its geological significance.

Just below Goddard Creek camp, and bringing up the rear, we noticed a milky color in the stream descending from the basin of Mount Henry, to the west. Casually we passed it. Mules had crossed the stream up higher, we concluded, and had stirred up sediment. The next day a party of us headed toward Mount Henry. As we neared the highest cirque we saw no mules stirring up sediment. Indeed, we would have turned in our ropes had we seen any. Yet the stream was still silt-laden. A glacier might be responsible, but glaciers weren't supposed to wander so far west of the Crest. A bit higher we came upon a huge snowfield covered with debris and sand cones - pyramids of sand-veneered snow - which do not ordinarily occur in the Sierra. The debris was soon traced to its source in freshly-cut flood channels above us. A cloudburst of proportions capable of cutting such channels, however, would hardly take place at an elevation of nearly 12,000 feet, where snow, not rain, is presumed.

The answer to our bewilderment was disclosed, along with the cairn of an unexpected prior visitor, on the summit of Mount Henry. Just to the south, in a high cirque still filled with the snow of two winters ago, had been a moraine-dammed lakelet. The moraine had collapsed, a torrent had been loosed. How we wished

that we might have witnessed the phenomenon — from Mount Henry.

MADDING MULES

Suppose, on moving day, you had foregone the pleasure of a sixin-the-morning departure from camp, had stayed behind to watch the mule-strings made up. You would agree, perhaps, that an analogy to an airport was not amiss. Allie Robinson, the man on the white horse, was the dispatcher, lacking only radio contact with his pilots. Packing of dunnage mules was relatively simple, nevertheless one would always marvel at the speed with which departures took place. More complicated was the moving of equipment and stores. Because we had to cool, clean, and canvas the stoves, we knew they weighed around 125 pounds. But "Buck" seems never to have found it out. If he grunted or strained as he tossed those weighty bundles aboard the big blue mules, he did it quietly. Buck's load was always the same, and he was first away, as those who tried to make the next camp ahead of him will readily testify. With dunnage and stoves gone, there was always an amusing scramble by other packers for choice loads. Sugar was at a premium, one sack being an ideal side-load. Flimsy boxes, tubs, and musical instruments were unspeakable.

The packers always treated the mules with a hybrid feeling arising in respect and contempt, a feeling in which the mules concurred. A fine opportunity to study their interrelated psychology presented itself at Mather Pass.

Here was a stretch of trail, just completed, known to be rough. The mules would be safer if they crossed the Pass separately, rather than in strings of five. Leisurely they approached the top, singly, or in congenial groups. They were no longer mere cogs in a wheel. They were individuals. As one individualist approached the summit, Tyler Van Degrift watched her carefully; then, just as the magnificent view unfolded before the mule, he commanded "Company—halt!" She must have been an army mule. She stopped, nonchalantly gazing over Upper Basin, seeking a route of descent adequate for a sane mule. Then "Forward — march!" and she obediently proceeded. She and her fellow saddle slaves found the descent to the basin great sport. They would scamper gaily down the almost level zigzags, loosening their loads with abandon, cut-

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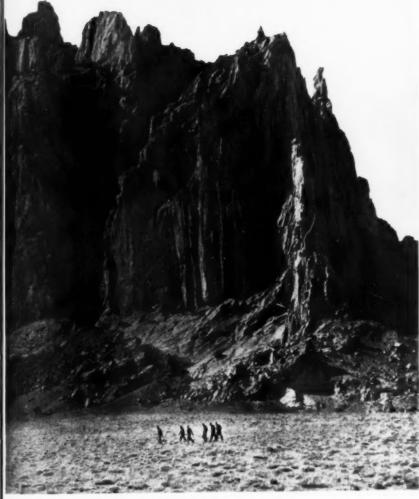
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SHIPROCK - THE EAST FACE By John A. Dyer



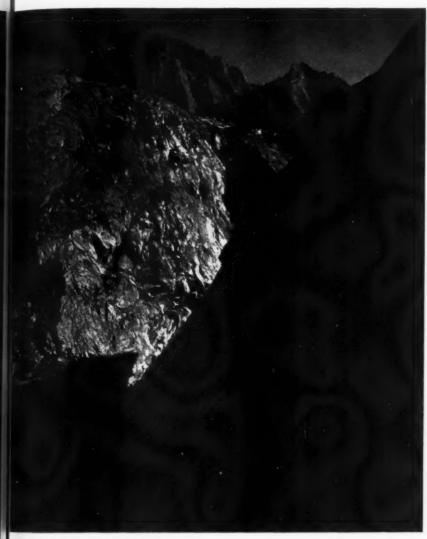


SHIPROCK - THE TRAVERSE By John A. Dyer



SHIPROCK - ON THE "MAINMAST" By John A. Dyer

DEVILS



DEVILS CRAGS By Cedric Wright





CAMPFIRE AT HEAD OF PALISADE CREEK By Cedric Wright





JUNIPER STUMP NEAR SAWMILL PASS By Cedric Wright



IN THE UPPER BASIN OF SOUTH ROPE OF KINDS HIVER IN COLOR WINDS



SPLIT MOUNTAIN AND CARDINAL MOUNTAIN FROM BENCH LAKE By Henry E. Timby



BENCH LAKE By Henry E. Timby





DETAIL OF HIGH SIERRA MEADOW By Henry E. Timby



ting switchback corners, pausing to look at the view, careening on again. Their joy at their emancipation was unbounded. You could really see that they were at last enjoying the High Sierra. But not the packers! Those of us on the Pass could hear only too clearly a rising crescendo of imprecative description. I don't think the packers were upset by the loosening of loads. That happens in the best regulated strings. What was worse, far worse, was that in order to intercept the animals and take in the sagging cinches, they had to dismount, and climb uphill.

WHEN DO WE EAT?

No story of a mountain trip would ever be complete without consideration of commissary. The Outdoors may well serve as an essential, periodic escape from civilization. Beauty of scene may well be food for the spirit. But as mealtime rolls around mountaineers seek more than esthetic satisfaction. They want victuals. Martin Brady, with affable disposition and able assistance, saw to it that food was invitingly served. But the problem of seeing to it that there were enough provisions on hand to serve had been met long before. Astronomical figures, deep deliberation would have confronted anyone who stepped behind the scenes during the preceding spring, when Dick Leonard held meeting after meeting for planning and anticipating every important detail of the summer. As a rough estimate it was known that some 22,400,007 calories would be needed. Raffi Bedayan saw that they arrived. Charlotte Mauk made it a point to know from day to day where each calory was. Any high-tripper knows the story of the sociable breakfast and dinner-time lineups. Who will forget Peter Joralemon and Breck Parker, in their high-pressure attempts to serve the last ounce of soup; the micrometer adjustment on the cutting knife of the meat servers; Bob Thompson and his cheery coffee fire, his never failing supply of alto-ambrosia? Need we mention the enthusiastic scramble of the youth contingent, led by Jerry Draper, which would have considered itself underprivileged and ill-fed with anything less than thirds on dessert? At breakfast time the hopeful expressions in the hotcake line were something the candid-camerists missed. Nor were breakfasts free from class distinction. There were those who had fish. The social prominence of the anglers might have amazed some, but not those who closely watched distribution of the catch. One thing is certain. No one in commissary ever complained about not getting trout. Could this have been the result of some concealed form of shake-down?

CLASS FOUR

It was at the Palisade Creek campfire that the most ambitious mountaineering projects were announced. There was to be a knap-sack trip to Mount Sill, from a base camp on Glacier Creek. It was to be led by Leland Curtis, Dick Cahill, and Wayne Smith. Its climax was a glorious mass ascent, later to be subjected to our Dorothy Thompson's merciless iconoclasticism at campfire. Also, at Palisade Creek camp, there were thorough tryouts for the Middle Palisade climb. Glacier-polished canyon walls served as proving grounds for those who would see the Sierra from California's most difficult 14,000-foot peak. Rope-downs, delicate balance climbs, belay practice. For all one afternoon the Polemonium Club held forth. Its president, newly elected, distinctly remembers black and blue evidence of his sixty falls an hour while Palisade candidates practiced belaying him.

Then the parties were made up. Norman Clyde led the first rope, Harriet Parsons and Dorothy Markwad led two more. Two additional parties made the summit the next day. To avoid congestion on the regular route Bruce Meyer, Keith Taylor, and I tried another—a traverse from Disappointment Peak. We were anxious to discover how inaccessible the Middle Palisade would appear to present-day rock-climbers. The name Disappointment Peak commemorates the feelings of the 1919 party, who found no route to bridge the abyss separating them from the unclimbed summit they sought.

Standing on the lower summit shortly after leaving the albicaulis camp above Palisade Creek we learned, quite to our pleasure, that the east side of the intervening ridge was climbable. Bruce did most of the route-finding, and greatly enjoyed piecing together narrow ledges, steep cracks, and friction traverses, establishing a rock-climber's trail across the wall. We were in no hurry, and there was plenty of time to relax. One of the pleasures of consecutive roped climbing is that only one person need work at a time — the leader. While he led, the other two, with no duties but rope management, reclined in comfortable belay positions and tested the opposite walls of the South Fork amphitheater for echoes. We

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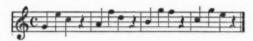
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had long since conceded that the Swiss (or was it the Tyrolese) knew what they were about when they invented yodeling, and here was an ideal spot to practice. No one was close enough to be bothered by chance dissonance. Buttresses were ideally spaced. Accordingly a yodel would be repeated not once, but many times. At certain points along the ridge no distinct echo could be isolated. Instead, the notes would be sustained as a chord. To the man launching such a chord the echo sounds like organ music. I became particularly fond of this modulation, resting long enough between changes in harmony to allow the air to clear:



The basic harmony may be subjected to as many variations as either (a) one's vocal chords, or (b) one's companions, can endure. Solo climbers may feel at liberty to yodel in counterpoint to themselves.

Between yodels we progressed, ever fascinated by the unknown ahead of us. We could never positively anticipate just what combination of holds we should have to solve next, but we were reasonably sure of some solution. Bruce found a very enjoyable route to the Middle Palisade, and we were joined on the summit by three other ropes of climbers. It was one of those mountain-top days answering Mummery's description of a perfect day on the Matterhorn: the unsheltered flame of a match would hardly quiver. Under such circumstances it's hard to leave a summit. Food, beauty, warmth, companionship are the essentials we seek in civilization. Here we possessed them all in a wilderness. Why hurry down?

CAMPSITES - AGORAPHOBIA VERSUS CLAUSTROPHOBIA

Where, you might well ask by now, did the 1940 High Trip go? Our itinerary included, as High Trip itineraries do, a string of beautiful campsites, strung on delightful trails to travel. The High Sierra region through which we passed — the back country of the new Kings Canyon National Park — has been described so often and well, however, that there is no need for more than a supplement. We camped at:

North Lake, where Forest Supervisor Roy Boothe gave us a specially reserved area and a send-off.

Hutchinson Meadow, where Allie Robinson thought poorly of the 1400 sheep grazing where he had expected to find his stock on moving day. There's one thing to be said about mules. They won't associate with sheep.

Goddard Creek, where a side-hill wampus could have slept better than most of us did.

Colby Meadow, where forty-seven intrepid souls enjoyed a trip to Darwin Glacier, where twice as many climbed The Hermit, and yet it was paradise for meadoweers.

Muir Shelter, locale of a comfortable night for the hardier fifty whose bedsites, scattered through the soft, wet granite, should puzzle many a future passer-by, as much as Elsie Bell Earnshaw's and Fern Shochat's meals amazed us.

LeConte Canyon, where it rained far too hard to allow Dick Leonard to persist in his refrain "it never rains on a well managed High Trip."

Dusy Basin, in whose wide expanse claustrophobites could find relief; where we traded first two-weekers for second two-weekers.

South Lake, where, as dinner time approached, we thought we had no wood, no meat, no butter, no cups, yet managed to locate them all in a photo-finish (using flash bulbs).

Grouse Meadow, that campsite, across from and below the Palisade Creek junction, which Nature designed and Will Colby found for the Sierra Club.

Palisade Creek, where all the high-trippers tasted such a timberline terrain campsite as is usually reserved for knapsackers; where for once there was no crowding in the meal line, there being no room to crowd.

Upper Basin, where all the big trout were brought in safely, as well as the second division from Split Mountain.

Bench Lake, one of the most magnificent of High Sierra campsites — after Frank Lewis and his clean-up crew had restored it. Here we had to over-stay our schedule two days. No one would leave.

Woods Creek, where, after a misty threat during our one-night stand we moved to Sawmill Meadow, where the heavens really opened, and didn't close 'til nine that night. With seven campfires and at least as many songs going at once, we learned that rain never cooled a warm heart. (The rain was arranged, of course, to settle the dusty trail to Division Creek and cars. — The Management.)

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CAMPFIRE - THE MAGIC CIRCLE

Why is it that memories of campfires are so long-lasting? They don't fill a particularly large portion of the day. Just the quiet hours after dusk, when we're too healthily tired to want to do anything else. Perhaps we remember these hours best because here, at last, the mind is in the ascendancy; unfettered by demands of a body, now only too willing to rest, it becomes hypersensitized. A brief exposure in firelight, and a balanced composition of human values is deep-etched.

It fell to our musicians to enhance our receptiveness. Ever since I first heard a violin in the mountains — Cedric Wright's, on a streamside in northern Yosemite — the vibrant strings have seemed more nearly to belong to mountain sounds than any other music (for the present I will concede that yodeling, being mere physical exuberance of the vocal chords, has none of the emotional value of music). Cedric Wright and Grace Nelson set the mood for our campfires; Ollo Baldauf and George Shochat added to the mood with songs of lingering melody. This was the prelude for what was to come.

Try to remember some of those campfires. What one thing was common to all of them, and to almost every moment of each? Smiles. There were fully 10,000 man-hours of smiling at campfire. And who brought them there? Oliver with his "lost and found"? Harold Crowe with his Margie exposés? Travis Winsor with his marvelous repertoire of legerdemain and song? Will Colby with his anecdotes? Madi Bacon and that what-was-it? Peter Joralemon's versatile accordion? Ike Livermore's new use for a milking stool? His roping? Jane Paxson's soothing song, Ira Joralemon and Francis Farquhar when they "Fit for General Grant," Johnny Schagen, just singing? Joe Sharpe's funny paper, perhaps? Or did the freshmen cause the smiles when they brought more wood? Was it delight at the plight of the victims of the whims of the ever-shifting smoke?

It was none of these. All, to a certain extent, were contributing to those effortless, pleasing smiles. But none of the performers, good

as they were, were responsible for them. You couldn't have prevented those campfire audiences from smiling. They had to. The spirit of the Sierra was in them. That's what kept the songs and smiles going while the sleepy slipped away, the stars sailed high. We were amused, yes. But more than that. We were contented. So often happiness, too ardently sought, becomes a will-o'-the wisp. Here we had stumbled upon it in the wilderness — and it lingered.

The First High Horse Trip

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BY ANITA DAY HUBBARD

WENTY-NINE of us stood there in the early morning clarity at Division Creek, while Allie Robinson passed judgment upon us. Young and old, fat and thin, male and female, he matched us each to a horse. My steed's name was Bud. He was strong and slow and sure-footed, and utterly calm in the face of anything except a bunch of red-topped meadow grass. I think he had not only budded, but bloomed and even a little gone to seed before I met him!

The night before, we had met Ike Livermore at that first, makeshift campfire, with the over-bright electric lights of the power house, and the over-generous warmth of the huge bonfire, about us. Ike's tall, competent, young appearance was reassuring, although he apologized because the prospectus of the trip might have made us expect a veteran in years as well as experience.

We had met the packers and the horse wranglers there too. Later we got to know them individually — Pete Buckley, with his prideful grey mule string; "Big," called that simply because it was his outstanding characteristic, and unmistakable; Roy Alvin, Austin Amick, Pete Garner and Russ Hatfield, and young Tommy Scott. There, by that first campfire, they looked us over, as stock men might have viewed the cattle they were to drive over a long trail, sizing up those that might be troublesome. They had the sharp eyes, quiet voices, and accurate, slow agility of all able horsemen.

Barbara Norris, versatile in all mountain lore, from making sandwiches to introducing the constellations intimately at a campfire, made her bow in the flickering firelight. Put Livermore and Craw Greene, youthful but assured, stood at Ike's shoulder. Martin Brady, the cook, carried the authentic poise of true genius about him. I had steeled myself to the idea of a diet of beans and dried apricots. Martin produced fresh salads and Parker House rolls, and, believe it or not, lemon chiffon pies with meringues!

We other members of the party had been eyeing each other with the critical wistfulness that all travelers set for a long journey together are apt to feel. Finally, Ike had sent us to bed. Thoughtfully unrolling my brand new sleeping bag in the darkness, I had

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tried to sleep. The morning soon came, and then the judgment at the corral. We mounted, were herded in companies of ten by our individual wranglers. Our carefully weighed dunnage was laden on the aristocratic mules, and off we went into the Sierra, seventy head of stock, Ike and his eleven lieutenants, and twenty-nine assorted "dudes"—the largest all-mounted party ever to go in.

At first, when the trail seemed perilous, I'd try to choose for Bud the way he should go. But each time he'd ignore me, look first at one possible way up an impossible boulder, and then at another, cast one look backward at me to warn me to mind my own business, and then calmly march up a tiny crack without losing a swing of his gait. He came down by the simple expedient of bracing his forefeet, sitting down and sliding. Sometimes, when Bud would come to the sharp point of a switchback, and look out over several thousand feet of drop, I'd repeat my grandmother's admonition for tight places, "What man has done, man can do!", but that was all. Ike had said the trails were not impassable. Others had gone before me. After that first day I let Bud worry about both our necks, and turned my mind to enjoy the new, exciting beauties of the High Sierra.

Very imposing we looked, strung out over the hot sandy plain at the foot of the sharply rising red peaks, as the morning sun led us up and up, through the dust and sagebrush. Then, almost suddenly, we were in a new and sparkling world, of clean granite, with noisy cascades of crystal water, blue gentian meadows, with brilliant yellow borders of mimulus, of delicate aspens, of great twisted trees, of huge tumbled boulders and ice polished slopes that shone like glittering mirrors.

Sawmill Pass, being the first, was spectacular to my lowland eyes. The rock gardens of rosy primrose, golden mimulus and all the rest against their grey granite frame were very exciting.

That first camp at Woods Creek, is a hazy memory of cramped muscles, good food miraculously ready, stars closing down over us as night fell, and sleep coming so swiftly and deeply that the night passed between the closing and the lifting of an eyelid, with blue Vega in the purple darkness giving way to the morning sun and Ike's roaring and beating on the dishpan that it was "Time to get up, get up, get u-u-p!"

The second night, we camped on lovely Rae Lake, under a

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lowering sky, with a placid sunset in a frame of mountains coming like a benediction. We made camp for two nights, and began to evaluate the shortcomings of our luggage, and the individual charms of our traveling companions. Sunburn lotion, fishing tackle and advice changed hands. Muscles unlimbered. The ardent fishermen caught fish in great numbers, and Martin made magic with them on his amazing range. The campfire became a social treat, with Ike and his accordion the focal point. Little groups of boon companions drifted together as leaves in a pool.

Glen Pass will forever be to me the original setting of Wagner's "Götterdämmerung." Up the rugged reaches the whole string of riders and pack animals could be seen at once, tiny against the huge rock faces, with new peaks rising at every turn, and strange, bleak little lakes of melted snow emerald against the grey.

That night Ike told us we would go over Foresters Pass the next day. Because of his admonitions for care, we felt a new thrill. Apprehension, somewhat about for the first days, was entirely gone. Possibility of danger was a new delight.

The morning dawned with threatening thunder clouds rolling over us. Up we went, and up and up. The top of the pass was touched with mist, and the tumbled talus bleak and long to traverse. Suddenly, as though one walked through a door into space, the sheer face of the drop was under our feet. Over we went, and miraculously, there was a trail, and a good one, zigzagging down the precipice for three thousand feet into the Kern River basin. As we reached the bottom, the storm broke. Lunch was served under a billowing tarpaulin, which deluged anyone who touched the fabric. The fire was long in lighting for the tea, and we were soaked and cold and a long way from camp, but what of it? The rain stopped after a while. No one had groused or looked glum. We dried out on the way in. There wasn't a sneeze in the lot of us! When we got into camp, Ike was chopping down an enormous tree. Martin had a cauldron of his amazing soup steaming in welcome. We didn't know how they managed. We just accepted the miracle with seemly gratitude.

Milestone reared its sheer pinnacle before us, and that night a party of rock-climbers, lithe, lightly accoutered, and I think slightly pitying us for using horses instead of our own shanks to carry us about in the crags, stopped over with us. Norman Clyde, fabulous

figure of the mountains, showed up with his pack that weighed eighty-five pounds, striding along as lightly as a woman with a new fur stole. He told us stories that made our little de luxe adventuring with the saddle horses and pack mules, along known and well marked trails, seem little more than a canter through the park. They sang for us, and did justice to Martin's art. Claire Rutledge accepted an invitation to climb Milestone and vindicated the prowess of the High Horsemen by keeping up with the best of them. We heard about it that next campfire.

Three nights in one camp gave us a sense of permanent residence, after sleeping every night before that under a different tree. One or two of the women changed from jeans to shorts. The men washed their socks. A Sabbath calm overcame us for the one whole day that we neither rode nor struck camp. The fishermen came in laden with golden trout. The photographers discussed their takes. Some of the tireless ones explored Milestone Basin and the South America lake basin. Packers and wranglers looked to their animals' feet. Granite boulders have their way even with iron and steel. The horses and mules just rested.

Mount Whitney came into the conversation. We rode south the next day, by way of the north rim of Kern River Canyon, across Tyndall, Wright, and Wallace creeks, and made camp on the generous reaches of Crabtree Meadow, where the ranger and his wife joined us for dinner and campfire.

In the morning we set out for Mount Whitney, a seasoned, tanned and eager lot. The day was perfect, clear as crystal, and constantly the terrain changed magically at every level. A huge brown marmot, calm and not at all man-shy, came from around his rock and watched us passing. The trail was easy, after what we had covered. Only at the very top, where we passed the "windows," with eight thousand feet of sheer drop under our stirrups, did the way seem perilous. The mountain top actually seemed clubby, with other trippers afoot and ahorse there before us, the rock shelter house, the cairn, the record book for prideful signatures.

But when one looked away from the immediate foreground and into the wilderness, the proportion changed. With no sides and no top to one's view, a clear sky, and only one's eyes to limit the vision, here was the top of the world, indeed, the very pinnacle we had sought in our long journeying. hed

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A last lovely camp at Rock Creek, and next morning we started home, with Army Pass before us. The horses went more swiftly. After days of slow walking we actually cantered here and there. We suddenly realized we had been two weeks away from civilization, with never a newspaper nor a radio to tell us what new insanity humanity had got itself into.

Finally, we came over the rim of the mountains, and down to Carroll Creek, where our journey's end waited us. The perfume of alpine grass and flowers changed to sage and dust. Martin provided a last feast on his mule-back range, perched on the edge of the stock corral, with sage for fuel. We unrolled our beds on hot sand, with a sage brush for shelter. Night fell.

Here was the final gathering, the summing up. More for comfort of the spirit than need of warmth, the sage brush fire lighted our travel-worn faces and our grimy jeans. Everyone relaxed. Ike was like a captain of a ship with a touchy cargo, when his craft is safely tied to the dock and his papers in order. The wranglers and the packers began yarning, now that the trek was over and their dudes safe in the home port. We realized what it had meant to take seventy animals and forty-one humans to the top of the world and back again, where every particle of food and equipment had to go along. There was never a casualty the whole way, of beast or human. There hadn't been a single unpleasant incident, either of the body or the spirit. We who had been willing and trusting followers slipped back into our own responsible selves, and marveled at the amazing wisdom and prescience of the quiet young man who had thought it all out before it happened.

We sat staring at the purple black of the Inyo Mountains, over the hot gold of the fire, and the final miracle happened. The Aurora Borealis, flaming with green and red, shot up into the sky over the hot desert mountains to the east and north! Our cup was filled to overflowing. The first High Horse trip was finished, and with what a curtain!

Winter Morning

Gently, over the snow-ridge Morning sends silent bright fingers. They waken the trees on the summit, Then slowly cross to the meadow, To rest on the glistening hummocks And shepherd the shadows to shelter.

Darkly, the trees on the skyline March in motionless journeys Over the ridge to the canyon And back again to their places To stand there, guarding the silence.

High in the blue space above them,
A few tiny clouds are appearing—
Delicate, ice-crystal streamers—
To glow with tints of the sunrise
And wave above brown, rocky summits.

Fragile they look, and too fleeting,
Wisps that are much too transparent
To veil the sun that is climbing
Above the ridge that once hid it.
Yet bit by bit they are growing,
Gathering substance, and reaching
Up to the zenith, across it,
And stretching away in the distance
Beyond the skylines that bound them.

Thicker and faster they're growing, Forming, at last, a grey curtain, Halting and hiding the sunshine, Holding it back 'til they've finished The task for which they've assembled. A wind moves softly among them, Gently herding them closer, Sometimes dropping a moment To move the whispering branches Of trees, then hurrying upward To pile the clouds even thicker, Weaving them into a blanket And spreading it over the forest.

Hesitant sounds of the morning — Bird-calls, and chatter of squirrels, Rustle of tiny things moving Through branches that seem to be waiting — Hush as the first little crystals Dance from the silent grey layers.

CHARLOTTE E. MAUK

The Beginnings of the John Muir Trail

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BY THEODORE S. SOLOMONS

THE idea of a crest-parallel trail through the High Sierra came to me one day while herding my uncle's cattle in an immense unfenced alfalfa field near Fresno. It was in 1884 and I was fourteen.

The Holsteins were quietly feeding, and I sat on my unsaddled bronco facing the east and gazing in utter fascination at the most beautiful and the most mysterious sight I had ever seen. It was May. The rain-washed air of the San Joaquin plain was crystal clear. I have thought since of an earlier May when John Muir waded out into that valley in a sea of flowers and first beheld his Sierra. I must have felt that day in my cruder, boyish way something of the awe and reverence that filled the mature man when he looked upon those zones of light and color — the bloom-flooded plain, the old-gold of the foothills, the deep blue of the forest, the purpled gray of rock, the flashing teeth of the Sierra crest.

I could see myself in the immensity of that uplifted world, an atom moving along just below the white, crawling from one end to the other of that horizon of high enchantment. It seemed a very heaven of earth for a wanderer. And heaven of earth it was — and will be until our new race is very old. I made up my mind that

somehow soon I would make that journey.

I found wings for a first skirting flight when I was eighteen and took a long vacation trip from the lower Fresno mountains to Lake Tahoe. And here, and in its approaches in Calaveras and Alpine counties, I got my first feel of High Sierra under foot. This initial journey through a mildly contoured, well mapped region yielded only the personal result of whetting the urge to a full-length crestwise journey. It took four years of working and saving and some six months of preparation before I was both able and ready for the plunge.

A tennis companion, Sidney Peixotto, later of Columbia Park Boys Club fame, had agreed to become a co-explorer with me; and our plan was no less than the complete subjugation in a single season of the entire High Sierra of California. In deference to any delays or difficulties we might conceivably encounter we proposed, however, to take plenty of time to it during that season of 1892. We were to run into the mountains in early May and emerge when the job was thoroughly done.

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The preparatory work — which fell to me as the arch-conspirator against the peace of the Sierra — included a search for every scrap of information, verbal and graphic, including, of course, the county maps. It all proved pitifully meager. In desperation I raided the Surveyor-General's office, and almost swooned with delight when they handed out plat after plat of official land surveys of nearly every township in Fresno and Tulare counties. Apparently the southern High Sierra was not only explored but meticulously surveyed, with section corner stakes set into gorge depths and frowning cliff faces — pitons, perhaps, driven by sledge-equipped eagles! And meticulously platted, with an artistry that rendered every sepia-wash canyon and ridge in bold relief. The genius was named Benson.

A large fly buzzed in the ointment of my bliss: if the southern Sierra was not unsurveyed and unknown, as the county maps with their blank spaces averred, but, instead, had delivered up its every alpine secret to that indefatigable wizard, Benson, what indeed was left for poor Peixotto and Solomons to explore?

I carefully copied on crackling tracing paper every township plat as far south as the Kern River. A singular fact was common to all of them — a paucity of place names, the plats abounding in such vague legends as "High Rocky Ridge," "Deep Valley," "Confluents of San Joaquin River." My spirits rose. At least there were still trails to be made, scenery to be described, peaks and streams and lakes to be named!

It seems incredible that no one told us, not even the Surveyor-General's staff, who must have been humiliatedly aware of it, that these gorgeous specimens of the draughtsman's art were pure fabrications, the products of an imagination unsullied by the slightest acquaintance with the Sierra Nevada. We discovered it in the field — bitterly. Months later we learned that the Benson survey frauds had been in their day notorious, a cause célèbre.

On May 17, 1892, with a new spring wagon and two small mules which we rechristened Shasta and Whitney, we started from San Francisco for Donner Lake, were soon bogged in snow, and shipped to Truckee first the wagon and, a bit later, ourselves — an

ignominious beginning for explorers. There was a brief respite from snow around Tahoe. After that we were in it and out of it, tracing a staggering course, with much cooling of heels while snow banks melted on the primitive roads of Alpine and Calaveras counties. We finally reached Yosemite in late June.

There we relaxed. After all, our main enemy, the snow, was going fast, and we had the rest of the summer to explore the southern High Sierra! So we took a month of pure joy in Yosemite before we met young Joe LeConte and made a kind of practice trip with him to Ritter and a plunge over the incredibly rough escarpment to Mono Lake. Ritter was a foretaste of climbing and a full savoring of alpine grandeur. Check through the file of Sierra Club Bulletins and you will find that Ritter and Banner, with their varied foregrounds, have been pictured oftener than any other group. We returned to Yosemite by way of Bloody Canyon. LeConte went back to Berkeley and Peixotto and I prepared for the rest of the High Sierra.

We started on August 9th. Our heavy load included now an 8x10 camera outfit sent me by C. E. Watkins, pioneer Yosemite photographer, with some instructions which I did not fully heed, for most of my plates were over-exposed, among them the views of Ritter and its glaciers which hang — or hung, for years — in the LeConte Lodge. They are the first, I think, ever taken.

The season was late, and at Cathedral Meadow Peixotto quite sensibly urged our return. But Galen Clark had wished us Godspeed, and my foolish pride was unequal to a retreat. So Peixotto and Shasta went back, and Whitney and I and the dutch oven and rifle and camera fared on. This solo flight was told in the Bulletin of January, 1894. Its chief result was the exploration of the Middle Fork of the San Joaquin and the mouth of the South Fork including the Pumice Flats and the Devils Postpile (or Woodpile, as it was also called). The splendid upthrust of the Ritter group and the Minarets was not part of the main crest or watershed, but was embraced by the extreme northerly sources of the San Joaquin.

Whitney and I found much in common, many adventures and mighty slim pickings toward the end. But we brought back several boxes of glass plates — which white-haired old Watkins fussed over, "cutting in" and "opaqueing" the over-exposed skies — and scads of data of all sorts. Best of all, a start had really been made

toward determining the route of the future John Muir Trail.

Court reporting had financed mules, camera, flour and bacon.

But I now turned to newspaper work; and the next summer I had a chance to cover the Columbian Exposition in Chicago for my own paper and a couple of weeklies, and I sacrificed the Sierra for that professional opportunity. But the following year I organized a new onslaught, abetted by a Local Room associate, Leigh Bierce, son of

the controversial Ambrose Bierce.

Meantime the Sierra Club had come into being and I made the acquaintance of John Muir, who now gave me what he remembered of the lay of the high streams and the crests they drained. He had bestowed no place names and made no diagrams, yet I gained substantially from the several pilgrimages I made during the next year or so to his beautiful Alhambra Valley home in quest of mountain knowledge.

With Bierce in 1894 I made the blunder, as in 1892, of beginning too far north — in the Grand Canyon of the Tuolumne this time. When we started out the precious month of July was two-thirds gone. But I knew the place to be superb and that it needed photographing badly. At that time a practical camera outfit, in both bulk and weight, was about twenty times the encumbrance it is now, and the descent of the Canyon was then, and for years after, a clothestearing, mad enough scramble without such a handicap.

It was on our way to the head of the Tuolumne descent that I met for the first time the man who has probably given more day in, day out devotion, more thousands of hours of a widely useful life to the cause of California mountains, than any other person in or out of the Sierra Club. Young Will Colby, with Leon Solomons and Ernest Bonner, had just finished a descent of the Canyon — a first acquaintance with the Sierra, I believe, for all three.

Bierce and I made the descent without accident to the plates or otherwise. Our chief difficulty was getting back to Yosemite. The law of diminishing returns worked well for us in the matter of our food supply — too well, for we fasted nearly three days. But the utensils and the forty-pound camera equipment got no lighter on the five thousand foot climb out of Pate Valley. In an old butcher shop in Yosemite I feverishly developed the plates. There emerged the first pictures (so far as I know) of the Grand Canyon of the Tuolumne — the Waterwheels, the other cascades, the Muir Gorge

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and the rest. And, that done, again I turned to the high mountain route, and with a pack horse and two jacks we took the shortest way to the place on the South Fork of the San Joaquin where I had left off two years before.

The lights and shades of that journey were also described in the Bulletin under the title, A Search for a High Mountain Route from Yosemite to Kings River Canyon. (Vol. I No. 6; May, 1895.) Its main result in the general scheme was that I had found that from the Tuolumne southward at least to the headwaters of the Bear-Piute divide it was entirely feasible to lead a pack animal as close to the crest as one would ordinarily care to camp. Indeed, the course that had been pursued was, with little deviation except for the Fish Creek segment, precisely the present route of the John Muir Trail. But from the head of Bear Creek it was, then as now, the Piute Basin that was the sticker.

That problem we were about to tackle - rather naively, considering that September was drawing to a close, when a heavy snow storm scared us half to death, so that we shot our animals "to save them from a worse fate," abandoned our outfit, including the precious exposed plates, and went floundering out of the mountains. Years after, in the Arctic, I often wondered why I had not had the sense to wait out that storm; for rarely, anywhere, does a first snow stav.

This misadventure left me with an emphatic preference for old snow rather than new; so it was bright and early next year that Ernest Bonner and I resumed the quest where it had been interrupted. From Fresno we headed for Bear Creek as directly as possible and found the remains of the abandoned camp.

The big camera in its case seemed perfect. But when I grasped the strap and withdrew it, it fell apart into many pretty little pieces of wood. The glue had dissolved. Fortunately I had provided myself with a little 4x5 camera whose pictures of the Evolution Group and of the Enchanted Gorge, made a few weeks later, were reproduced repeatedly, some of them by J. N. LeConte and J. S. Hutchinson, for as long as thirty years afterward.

On Bear and on Mono Creek, while Bonner watched the critters and kept the camp, I made several knapsack trips out of which many pictures, topography sketches and place names were born. The reconnaissance was pretty thorough, and, regarding the main tain

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problem, yielded the conclusion that the mural zigzag forming the Bear-Piute divide was practically impassable for us. Nor does it appear to have improved since, for the Muir Trail avoids it and crosses Selden Pass (the gap west of the peak I called Mt. Senger). Bonner and I would have used it, too, when we decided to forge ahead on foot. But it was necessary to go to Jackass Bridge on the South Fork to make up our packs and leave our horse with a sheepherder. We also entrusted to him nearly all the undeveloped plates. He must have unpacked and looked these over, for in San Francisco they all blackened in the trays. No doubt he was keenly disappointed in what he saw. Disappointment is a feeble word to express my own emotions.

Bonner and I got back to our summits by ascending the South Fork, avoiding the basin of Piute Creek altogether and exploring the next one, which turned out to be the true head of the San Joaquin River, though it now bears the name Evolution Creek.

I published an article describing this 1895 trip in the journal of the Appalachian Mountain Club. But no account of it has ever appeared in the Sierra Club Bulletin, and as it was by far the most extensive and important of my several expeditions in search of the High Mountain Route, it may be of interest now to describe our further movements.

When we reached the place on the South Fork where Evolution Creek comes tumbling over the canyon side, we roughly gauged the stream flow and compared it with that of the river above it. The tributary seeming the larger stream — which corroborated a sheepherder's claim that the river itself did not head at the main crest — we cached all but three days' supplies and with lightened packs toiled up the wall, the crashing cataracts drowning our acclamations, and reached the wondrously beautiful valley above. But if the valley delighted us, imagine our emotions when we gained the higher lake basin and gazed upon its setting!

LeConte first described the Evolution Group for Sierra Club readers some twelve years later; and when, in Alaska, I read his article I was gratified that so competent a judge of the comparative grandeur of the High Sierra agreed with me on the scenic merits of the Evolution region. As I photographed and sketched I felt that here was a fraternity of Titans that in their naming should bear in common an august significance. And I could think of none more

fitting to confer upon it than the great evolutionists, so at-one in their devotion to the sublime in Nature.

From several heights I could see that at the head of the basin was an easily accessible gap or pass to the highest Middle Fork streams of Kings River. In a dream that night I even saw the trail.

Returning to the South Fork Canyon and ascending it, we found the sheepmen were right and the old Whitney Survey wrong — the river reached no higher than the southern ridge of Goddard, miles from the crest. We climbed the mountain, gave it a Sierra Club register, and then set out to follow the Goddard divide to the gap (now the Muir Pass) on which I had pinned my hopes. But snow, rain and hail drove us, soaking, down into the gorge of Disappearing Creek, between those dark stalwart giants, Scylla and Charybdis, into The Rotunda, with its Bronze Cliffs, and over the Snow Tunnels in that deep, narrow, treeless, shrubless canyon.

We reached lower Goddard Creek next day, and, the following, that flower park called Simpson Meadow on the Middle Fork. Then we fought our way down the canyon into Tehipite Valley, out again by Lil Winchell's Path of the Righteous, visited Tehipite Dome, made a cut-off to the Tunemah Trail — whose name should never be Englished — back to Simpson Meadow, and on to the great South Fork Canyon by the Granite Basin Trail. Here we met the party of Warren Gregory and Dr. Emmet Rixford, with whom we made our exit from the High Sierra.

We had covered above two hundred miles on our one deck load of provender which, together with our down quilts and a none too light plate camera outfit, had weighed around 120 pounds. We had traveled eighteen days, averaging eleven miles a day on a little less per man-day than two pounds of dry and canned food. For that early period, and considering the terrain, it was not half bad.

I had now completed a kind of reconnaissance of the unexplored High Sierra. It fell short by perhaps ninety-five percent of the original preposterous scheme of a complete exploration. But I had at least followed down the range from Yosemite to the Kings River Canyon, and that is what I had made up my mind to do. The vast Alpine complex called the southern High Sierra remained much as it was — terra incognita; and I had gained a whole-hearted respect for the job! But the ground was broken and a skirmish line traced from which in subsequent years J. N. LeConte and others of the

exploring group of the next two decades continued the battle against the unknown.

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During the winter I assembled the data and worked out in detail the results of the series of expeditions and made them into an elaborate report to the Club. The letter of presentation, which was published in a long vanished "Circular of February 26, 1896," listed and described the several parts of the report:

(1) The following 125 pages of typewritten matter; (2) a map of the region subject of report, and (3) an album of 139 views of the principal scenery encountered during my travels.... Under a special head at the end of the report I have described a continuous route through the High Sierra from Yosemite to Kings River Canyon over which animals may be led....

On the same day LeConte presented a new map which, though on a smaller scale than my hand drawn map, embodied the topographic results of all my explorations as well as of his own and of others in the Kings and Kern.

The Yosemite region in the north and the Kings-Kern section in the south had had each its devotees. But the formidable no-man's-land between being now bridged and roughly traversible, the directors decided to encourage travel and exploration by sponsoring an excursion through it. Accordingly, a few weeks later, they sent out a second Circular — on a postcard this time — long forgotten by even our oldest members, only one copy of which, now in my possession, seeming to be extant. It was as follows:

CIRCULAR NO. 11; MARCH 6TH, 1896

To the Members of the Sierra Club:

The Board of Directors are considering the details of an excursion for members of the Sierra Club. The plan contemplates a rough mountain trip with pack animals through the regions of the High Sierra lying between the Yosemite Valley and Kings River Canyon, to take place during the month of July, and to cost each person between forty and seventy dollars. Though with a common purpose, the party will be composed of independent groups of two or more congenial persons, so as to allow the greatest freedom of action.

Those interested will please notify the Secretary before March

20th. So soon as sufficient have responded, a meeting will be called and the details arranged.

Yours respectfully,

ELLIOTT MCALLISTER, Secretary

SIERRA CLUB Academy of Sciences Bldg. San Francisco, Calif.

This project, precursor of William E. Colby's High Trips, must have sounded a bit venturesome, for too few responded to justify organizing it.

I made two trips in 1896. One included the top of Mount Lyell and a traverse of the upper Tuolumne Canyon, and its purpose was to demonstrate that a group of inexperienced but reasonably athletic college girls was equal to such exploits and in a snowy June to boot! It was a successful experiment. The other journey was with Walter A. Starr and Allan L. Chickering, who accompanied me from Yosemite on a three weeks mopping up trip over part of the ground I had covered in previous years. I made some further sketches of the topography and secured a number of larger photographs. I wished also to try the upper Merced as a shorter pathway to the San Joaquin, and, if time were available, to cross Piute Basin into Evolution Creek, and from there to descend into the Middle Fork of the Kings from the (now Muir) pass. But I was fated not to try.

I developed what I suppose was a case of indigestion — so mild I was unaware of it except for a rapid heart, which scared me and hampered climbing at the high altitude of Mono Pass. It was the only time this ever occurred in an aggregate exploring experience of fifteen or twenty years here and in the mountains of the Far North. So, both at Mono Pass and at Mount Goddard, Starr subbed for me with the big camera, and an excellent job he made of it. We went out by way of Pine Ridge to Ockenden's, where I left the mountains but the two boys continued the trip, visiting Tehipite and finally reaching the Kings River Canyon. Starr very faithfully made the exposures and altitude observations I wanted in Tehipite and beyond, so that, on the whole, I was able next spring to file with the

Club a supplemental report with a considerable body of new detail. While it added nothing to the High Mountain Route itself, the trip was in every other respect exceedingly fruitful; and I think it also established a mileage record for Starr and Chickering for continuous animal travel through the higher mountains.

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Chickering's diary of their journey both before and after I joined them, as well as after I left, was published in the *Bulletin* of 1935 in an article by Mr. Starr.

I attempted some improvements in the northern part of the route during the following summer — that of 1897 — before I went into Alaska, there to remain for ten years, and to pack on my back, first and last, probably ten times the tonnage with which I had burdened it so willingly in California. As for the Kings River section of the route, in the higher parts of which I had done little, I knew that with LeConte, Bolton Coit Brown and one or two other indefatigable ones, it was in safe hands.

With Mr. and Mrs. Robert M. Price and a plucky little Englishman named F. W. Reed, a way was first pioneered up the Canyon of the Merced to the junction of the Lyell Fork. The present trail into and through the Canyon from the base of Clouds Rest substantially follows our route, which we provisionally blazed. We then monumented an incredibly rough way up the wall and into the beautiful, Tuolumne Meadow-like valley of Triple Peak Fork, climbed some of the Merced group, and joined our route to the McClure trail below Isberg Pass. We then made an exploration of the upper part of the North Fork of the San Joaquin, and climbed Mount Ritter from the west.

Back-tracking to the Maclure Fork, we entered the Tuolumne Canyon, which by now "Bob" Price knew "by heart," but which his wife had never seen. I carried part of their grub for them, along with my big camera, to a little way below Return Creek. They then went on to Hetch Hetchy while I remained to climb the north side of the Canyon for some shots at the lofty south wall. It was successive ledge work, not hard enough to keep today's rock-climbers awake. But once, as I looked at my upraised hands grasping a ledge barely within reach, two little flat heads swayed, with darting tongues and beady eyes, a few inches above each hand. After all, it was their ledge, and I somersaulted a quit-claim — and managed to grab a bit of brush twenty feet below and stay my fall. But it had

"got me down" in a double sense, and I was all through for the day.

North walls hated me that summer. Earlier, I was photographing Half Dome from the opposite rim immediately east of the Basket Dome. I made the exposure on a bit of ledge not fifteen feet below the top of the wall, and to save my soul I could not retrace my way. Instead, I was obliged to descend thirty-seven hundred feet to Mirror Lake, and as I did not have sense enough to leave the bulky camera knapsack where it was, I was all of ten hours deploying about that wall before I got down to Mirror Lake. A camper, observing my face, gave me my first and last drink of whiskey. It tasted like flavored water. The predicament had been as nasty as its inception was inexplicable.

To return to the Tuolumne Canyon — I gathered up my hobbled mule, did some exploring on the south rim, including the Ten Lakes region, and then went on to meet the hungry, smiling Prices, toiling up the trail from Hetch Hetchy, and to accompany them to Crocker's on the Big Oak Flat road.

Here a humiliating experience awaited me, prelude to my last high mountain journey in the Sierra for thirty-five years. I had an appointment of many months' standing to lead a party of the United States Geological Survey and their guest geologists into the upper Merced-San Joaquin High Sierra; and as, of course, they would be mounted it was plain that I should be mounted, too, if I expected to keep hoofs off my heels. My pack mule, whom Reed had dubbed Mule-o, was a young and lovable animal, but he had never been ridden. I conducted Mule-o into the Crocker field opposite the house, got a saddle on him without difficulty, though he turned and nibbled at the stirrup rather thoughtfully. And then I mounted — and immediately dismounted, I was going to say. But Mule-o really attended to that.

The stage-station porch had been vacant when my sleek little friend and I began our seance. I had wanted it to be just that way. But this was like a fire or a murder. By magic, Crocker's porch became peopled with stable hands, stage drivers, tourists and the sympathetic Crocker family. Unseemly laughter rang. Cameras clicked. * * * * I rode Mule-o finally; but besides the dubious honors of the encounter I carried away — in my person — several parts of the rail fence which Mule-o had used to rub off his back a very large and persistent horse-fly. He made a model riding

mule, and much impressed the geologists, whose mounts, as perhaps I may impart after forty years, were nothing to brag about.

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But the party? I hoped that by interesting the Geological Survey in our California Alps as an economic asset they might speed up the survey of the High Sierra. This little inspection tour was helpful, for next year Marshall had the Lyell Quadrangle on his plane table.

H. W. Turner of the Survey was head and host of our party of thirteen. Professor Hoskins of Stanford, and Charles R. Van Hise, who then occupied the chair of geology at Wisconsin University and was afterward its president, were the principal technical members. Charles A. Bailey, later of Sierra Point fame, probably the most enthusiastic mountain fan in this or any world, followed the party at a discreet distance until, after a day or two, Turner invited him to join us.

I took the party over my 1892 route, close to Lyell and Ritter and the Minarets, across the Pumice Flats — which delighted our guests — to the Devils Postpile — which set every geological nerve a-tingle — down the San Joaquin, up the Mammoth Trail and over the Isberg Pass. We could have returned to the Valley circuitously by McClure's trail, with a cut-off to the Sunrise trail below Clouds Rest. Instead, I led them by the new route Price and I had worked out down the queenly glacial trough of the Merced.

To summarize certain of the results of the expeditions: the several descriptions of what I had seen which were published in the Sierra Club Bulletin, and the many more in magazines and papers, would have been valueless without diagrams and names for the more important features. I first published about 150 place names, many of which, referring to objects of only local and minor significance, have since perished. Farguhar's Place Names contains about sixty of the total, of which perhaps half were of my own bestowing. I christened about seventeen mountains. When one considers the extensive area covered, with its close-packed crested ridges bristling with peaks, it becomes evident that my companions and myself were pretty chary about labeling things as, likewise, were LeConte and his associates. Intentionally we put the brakes on our naming impulse. I knew that such names as we did bestow were safe, for they were bound to be copied, later, on the official topographic surveys. But this might not be for years, and in the

meantime, the opportunity offered to others to use their taste and ingenuity on scores of still unnamed peaks and other splendid scenic objects would be a spur to travel and exploration. On the whole the policy seems to have worked well, though perhaps too many inappropriate proper names have been used. There is opportunity for improvement. Between Yosemite and the Kern only about 350 peaks, pinnacles and crested ridges have received names, while of peaks alone, approximately 400, distinctly contoured, their altitudes stated or shown, of which nearly one hundred are between 13,000 and 14,000 feet high, remain without names today.

The series of expeditions opened the way for travel parallel to the crest; and by roughly orienting the drainage systems and establishing a series of landmarks they furnished a considerable body of data which facilitated the subsequent and much more extensive work of continuing and perfecting the route. The John Muir Trail of today was the final result.

A Climber's Guide to the High Sierra

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PART IV

YOSEMITE VALLEY

BY RICHARD M. LEONARD AND DAVID R. BROWER

OSEMITE Valley offers one of the finest localities in America for a sport that has made the Kaisergebirge and the Dolomites internationally famous — concentrated rock-climbing. Long enjoyed throughout the world as complete in and of itself, this sport does not require attainment of high summits, but tends to emphasize route-finding, whether on summits, walls, or arêtes. For that reason Yosemite has been a pure rock-climbing mecca for many years, more than perhaps any other region in the country.

Even in those prehistoric days, before the discovery of the incomparable Valley, there were legendary rock-climbing exploits. Such was the first descent to the base of the Lost Arrow, a feat which has never been repeated, even with the advantages of the finest technique of modern rock-climbing. The Indian maiden, Tee-heeneh, "roped down" on lodgepole saplings joined with deer-thongs to recover the lifeless body of her lover, Kos-soo-kah. By means of thongs and the strong arms of other members of the tribe, they were brought back to the rim of the Valley, where Tee-hee-neh perished in grief. This legend is reported in many different sources; Hutchings, in 1886, stated the height of the rope-down to be 203 feet, a truly remarkable rock-climbing achievement.

It was not until 1833 that the white man is known to have seen Yosemite Valley. From reports published long before the later and widely publicized discovery of the Valley, it appears that Joseph Reddeford Walker and party came from the vicinity of Bridgeport, perhaps over Virginia Pass and along the divide between the Tuolumne and the Merced Rivers, to the Valley rim. There they marveled at waterfalls over "lofty precipices . . . more than a mile high." The first rock-climbing attempt by white men was soon stopped by difficulty, for "on making several attempts we found it utterly impossible for a man to descend."

In 1851, however, Yosemite Valley was really made known to the world, when the Mariposa Battalion, organized by harassed settlers of the foothills, trailed Indians to their stronghold in Ahwahnee — "deep grassy valley."

Yosemite soon became a source of attraction for tourists from all over the world. One of the earliest to arrive was James M. Hutchings, who first came to the Valley in 1855. Throughout the early history of the Valley, and at least until publication in 1886 of his book, *In the Heart of the Sierras*, Hutchings was continually interested in attempting to climb every point around the Yosemite Valley.

John Muir first came to the Sierra in 1868. Through him more than any other man has the beauty of the region and joy of mountaineering in it been made known to the entire world. His climbs in Yosemite Valley and the High Sierra, in many cases the earliest of which we have knowledge, place him among the pioneers of California mountaineering. His "Sunnyside Bench," east of the lip of the Lower Yosemite Fall, is still one of the untrammeled beauty spots of the Valley. His early exploration of the Tenaya Canyon led to route-finding in the Grand Canyon of the Tuolumne. Together with the first ascents of Cathedral Peak and Mount Ritter, Muir also has the distinction of traversing under the Lost Arrow along "Fern Ledge," beneath the crashing power of the Upper Yosemite Fall.

In early October of 1864 Clarence King, assisted by Richard Cotter, fresh from a victory over Mount Tyndall, made the first serious topographical and geological reconnaissance of the Yosemite Valley. On this survey they climbed practically every summit on a circuit of the rim of the Valley. This circuit included only the easier points, such as El Capitan, Eagle Peak, Yosemite Point, North Dome, Basket Dome, Mount Watkins, Sentinel Dome and the Cathedral Rocks. Any summits which were much beyond this standard of difficulty seemed to them completely beyond the range of human ability. In 1865 the California Geological Survey wrote concerning Mount Starr King and Mount Broderick, "Their summits are absolutely inaccessible"; and of Half Dome, "it is a crest of granite rising to the height of 4737 feet above the Valley, perfectly inaccessible, being probably the only one of all the prominent points about the Yosemite, which never has been, and never will be trodden by human foot."

Spurred by this challenge James M. Hutchings and two others

made the first recorded attempt on Half Dome in 1869, but were stopped at the saddle east of the Dome. After at least two intervening attempts the Scotch carpenter and trail builder, George G. Anderson, finally engineered his way to the top on October 12, 1875.

Inspired by the success on Half Dome, adventurous climbers turned their attention to Mount Starr King, the "extremely steep, bare, inaccessible cone of granite" referred to by Whitney in the *Yosemite Guide Book*. George B. Bayley and E. S. Schuyler made the ascent in August, 1876, somewhat to the dismay of Anderson, Hutchings, and J. B. Lembert, who, using a different route, a year later found the summit monuments built by the first party. Bayley was one of the most remarkable climbers of the time. In 1876 Muir recorded that "Mounts Shasta, Whitney, Lyell, Dana, and the Obelisk (Mount Clark) already have felt his foot; and years ago he made desperate efforts to ascend the South Dome (Half Dome), eager for the first honors." Later he was distinguished by an early ascent of Cathedral Peak, and an ascent of Mount Rainier during which he was seriously injured by a fall into a crevasse, recovering only to be killed in a city elevator.

After the great ascents of the "inaccessible" summits of Yosemite, there was a period of quiet in the climbing history, for everything seemed to have been done. Since Hutchings had claimed the ascent of all Yosemite points, except Grizzly Peak and the Cathedral Spires, a climber of another generation came forward in 1885 to make the ascent of Grizzly Peak. He was Charles A. Bailey, who later became an enthusiastic member of the Sierra Club, locating, climbing, and naming Sierra Point for the Club.

Since it now appeared that all summits in the Yosemite region had been climbed, there was a long gap in the climbing history, broken only by the exploratory routes of a few outstanding climbers of the period. Those whose climbs are best known are S. L. Foster, Joseph N. LeConte, Charles and Enid Michael, William Kat, and Ralph S. Griswold. Foster was best known for his canyoneering in the Merced and Tenaya canyons beginning in 1909. LeConte has been remembered through the description of his ascent of the gully on Grizzly Peak, which permits a route to the "Diving Board" on Half Dome. He also wrote of several other interesting "scrambles about Yosemite" of nearly three decades ago. It has been said of the Michaels that they climbed everything that did not require

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pitons. The same description might apply to Kat and Griswold. All have been so modest that it is possible we may never know the true history of the interesting routes which they have pioneered. For, wherever a young rock-climber attempts a "new route," he is quite likely to find a cairn or other indication that someone has been there but a few years before him.

Again it seemed that nothing more could be done. However, in the early thirties, a new phase of rock-climbing was growing, based on development of modern technique in Europe. In the summer of 1931, Robert L. M. Underhill, the leading American exponent of the use and management of the rope in rock-work, interested Californians in this phase of climbing. It has been shown that some very remarkable climbing was done without the knowledge of this safety technique; but the early climbers who have discussed the matter agree that their climbing frequently involved unjustifiable hazard. Moreover, it was clear to all of them that they could not attempt routes of very high angle and small holds. Thus the introduction of a new type of climbing, combined with the protection of pitoncraft, again opened a new field.

It was not until September 2, 1933 that the young Rock-Climbing Section of the Sierra Club felt competent to make organized attempts upon the spectacular unclimbed faces and spires of Yosemite. Although as long ago as 1886 Hutchings, in reporting the relatively easy ascent of Grizzly Peak, claimed that the last "unclimbed summit" of Yosemite had been ascended, nevertheless the Cathedral Spires, the Church Tower, the Arrowhead, Split Pinnacle, Pulpit Rock, Watkins Pinnacles, and the Lost Arrow still stood forth without even an attempt ever having been recorded against them. In addition to these summits there was a field, practically unexplored, of route-finding on faces, arêtes, gullies and chimneys. Among these may be mentioned Washington Column, Royal Arches, Panorama Cliff, Glacier Point, Yosemite Point Couloir, Cathedral Chimney, and the arête of the Lower Brother. Ropes, pitons and trained experience in their use, were to be the key to these ascents.

TOPOGRAPHY AND ITS RELATION TO CLIMBING

Located on excellent highways, and with rail and bus connections, Yosemite Valley is now just a few hours from San Francisco and vold.

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Los Angeles. Campsites are excellently provided for by the National Park Service and need no further details. Accommodations of all types are provided by the concessionaire. Parties intending to climb should first register, either at the Ranger's Office in the Valley, or at the nearest ranger station.

The topography and geology of this area are covered in a very remarkable fashion, possibly the best of any climbing region in the country. The map¹ prepared by François E. Matthes, Senior Geologist of the United States Geological Survey and an Honorary Vice-President of the Sierra Club, is so complete that no other detail map is needed for this portion of the Guide. One can even trace the crossing of contours on overhangs and the accurately detailed forms of spires, arêtes, and chimneys. Every climb to be discussed in the Guide is either already named on that map or sufficient description will be given to identify it clearly.

The geology of Yosemite has been under consideration, ever since its discovery, by eminent scientists throughout the world. Of the early conflicting theories, those of John Muir have best stood the test of time and study. These have been amplified in detailed studies by François E. Matthes for the United States Geological Survey since 19072. In brief form, for the benefit of rock-climbers, the geological history may be summarized as successive upwellings of molten granitic materials which cooled several thousand feet below the surface. Yosemite Valley seems to have had a greater variety of these intrusions than most of the Sierra Nevada. This, together with the prominence of master joints, has amplified the effect of erosion. Upon long-continued and alternate sculpture by running water and glacial action, the Valley was deepened to essentially its present form. This geomorphological history has produced smooth faces of high angle with holds few and far between, but exceptionally firm. While loose hand or footholds must be expected occasionally, rock as sound for climbing is seldom found. The scarcity of talus piles under the high cliffs is clear evidence of this. On the other hand the infrequency of large holds tends to emphasize precise balance climbing, frequently requiring long leads on minute holds. For this reason plenty of rope should be avail-

¹ Yosemite Valley Sheet, 1906 and 1938, by United States Geological Survey, scale 1 inch = 2000 feet, contour interval 50 ft.

² Geologic History of the Yosemite Valley, Professional Paper 160 by François Matthes, United States Geological Survey. Petrological Supplement by Frank C. Calkins. 1930.

able; at least 120 feet between climbers, plus 200 feet of reserve rope with ample material for slings. As will be indicated hereafter, pitons are definitely advisable on most climbs, and are essential on many. Most climbers will prefer, wherever possible, to avoid using pitons as direct aid. No party, however, should hesitate to use pitons for safety as frequently as desired even though not specifically recommended by this *Guide*. The best footgear is rubber. There seems to be no necessity for nails, at least in summer. In common with the rest of "The Range of Light," the weather in summer need rarely be considered as a factor in climbing. In general, the altitude is so low and camp so close that no protection against weather need be arranged. Nevertheless, since friction holds play such an important part in climbing on these smooth walls, retreat in case of rain must be adequately planned.

ARRANGEMENT OF THE GUIDE

The three sections of the *Guide* published thus far have each covered particular groups of the high peaks of the range. There the logical treatment was geographical, regardless of difficulty. For an area as restricted as Yosemite Valley, however, it has been considered best to group climbs according to difficulty, thus facilitating the climber's choice. Within each group the climbs are listed geographically, starting from the westerly end of the north side and following around the walls to the westerly end of the south side.

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June 1898, 2:4, pp. 216-221 (Bailey); May 1894, 1:4, pp. 133-135 (McAllister); also Mountaineering Notes in this number.

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Appalachia: June 1937, 21:3, p. 431, December 1934, 20:0, pp. 182-183.

Geologic History of the Yosemite. (Numerous photographs.)

CLASS I - Any footgear will do

This classification is included within this guide for the principal purpose of indicating the class of difficulty of certain of the summits. The climbing is so easy and the routes are so obvious that individual description seems unnecessary. Even stormy weather would not change the classification.

El Capitan (7564). Clouds Rest (9929).

Eagle Peak (7773). Liberty Cap (7072).

North Dome (7531). Sentinel Dome (8117).

Mount Watkins (8235). Highest Cathedral Rock (6638).

CLASS 2 - Proper footgear - nails or rubber - required

Basket Dome (7602). First ascent obscure. Can be approached either via the Yosemite Falls Trail and North Dome, or from the Snow Creek Trail. The cliffs below, dropping to Mirror Lake, require rope for safety.

Quarter Domes (8276). First recorded ascent, 1923, by Joseph

N. LeConte and party of six. No information as to route, but stated "not difficult."

From Tenaya Canyon. First ascent, June 11, 1939, by R. S. Griswold, C. A. Harwell, Julian Howard. From 500 feet above the mouth of the Tenaya Creek Inner Gorge (See Class 4) a broad ledge ascends 1200 feet to the SW., terminating in a gully heading just W. of the domes. When free of snow, the route is a moderate climb, complicated principally by dense brush. The first ascent was started from within the Gorge.

Half Dome (by cable) (8852). First ascent, October 12, 1875, from the Clouds Rest saddle. After three attempts by other parties, George G. Anderson was able to make the ascent by drilling holes for iron spikes. Sixty-five years later the technique is still the same although more luxurious. To simplify and safeguard the ascent, one-inch steel cables are now permanently fastened to the dome, each summer being raised on three-foot pipes. Wooden footrests are placed at ten-foot intervals on the 46° slope. The ascent from the saddle at the base of the cable is approximately 450 feet in height. For anyone who is not too seriously troubled by exposure the climb is entirely safe, but rubber shoes are essential. The cables were placed in 1919 by the Sierra Club, at a cost of \$5,000.00 financed through the generosity of M. Hall McAllister. It has been climbed without aid of the cables (See class 4).

Broderick Canyon (5250 to 6100). An amazing little canyon, first described by Joseph N. LeConte from his trips in 1912. It affords a fascinating route between the top of Vernal Fall and Half Dome or Clouds Rest. The only difficulty is in passing the huge talus blocks at the lower end of the canyon.

"Diving Board" - From Little Yosemite (7500). First ascent unknown but probably early. First recorded ascent, July 26, 1912, by James S. Hutchinson and J. N. LeConte from Grizzly Peak.

From Lost Lake proceed through brush towards the 7000-foot mark on the map at the SW. base of Half Dome. A Class 2 route can be worked out near the right (E.) end of an intricate maze of ledges separated by 45° to 50° massive granite slopes. If the lucky ledge is found, a horizontal traverse W. will bring one to easy sand slopes. Follow these as directly as convenient to the base of the Dome and skirt the cliffs to avoid brush.

This route is usually too intricate to find when going toward

Little Yosemite. Unless equipped with a 200-foot reserve rope, it is safer to plow through heavy brush and skirt the cliffs on the W.

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From this terrifyingly thin granite exfoliation shell, poised over the tremendous overhang above Mirror Lake, there are amazing views of the Valley, Tenaya Canyon, and the sheer face of Half Dome just to the E.

Grizzly Peak (6219). First ascent, 1885, by Charles A. Bailey. From Little Yosemite proceed to the notch at the head of LeConte Gully. Follow the S. side of the ridge to the summit.

CLASS 3 - Ropes should be available

El Capitan Gully (7500). First recorded ascent, June 5, 1905, by J. C. Staats who continued the climb to the rim to get help after Charles A. Bailey had fallen 400 feet to his death. This, the western of the two gullies between El Capitan and Ribbon Falls, does not involve any real climbing problems until the steep upper 500 feet.

Tenaya Canyon (4000 - 8000). First recorded traverse, 1866, by Joseph Farrel, Alfred Jessup, Mr. Stegman.

One of the most dramatic of Yosemite contrasts is the abrupt change experienced as one travels the short distance from the Valley into Tenaya Canyon. Within an hour one may pass from the roads and throngs of the level Valley floor to a wild trail-less canyon deep in the shadow of the great cliffs of Half Dome and Clouds Rest that tower high above a dense Canadian forest. Although a faint trail leads from Snow Creek and along the N. bank of Tenaya Creek to the mouth of "Inner Gorge," the complete traverse of this Canyon is reserved for rock-climbers. The routes, varying in difficulty with the season, offer no particular climbing problem once they are found.

North-side route — Ascend sloping, brush-covered shelves to the left (N.) of the Inner Gorge until about 250 feet above the stream, and work eastward over connecting ledges until it is possible to traverse diagonally down into "Lost Valley," at the upper end of the Gorge. Continue over the level floor along the north side of the stream (brush is worse on the south side) to Pyweack Fall, the 600-foot waterslide at the head of the valley. Directly ahead a brush-covered talus fan is ascended several hundred feet, and a traverse made to the right over smooth granite. From the end of the

traverse a short gully leads upward to the lower end of "Waterwheel Valley," through which it is open going to the waterwheel falls at its head. The left side of the stream may be followed past these falls to Tenaya Lake with no further difficulty.

South-side route — Cross the stream at the mouth of the Inner Gorge and ascend the talus fan leading toward Quarter Domes to a point 300 feet above the stream. From here a route will be discerned slanting slowly downward at a uniform angle, crossing the lower slopes of the Clouds Rest façade to the head of the Inner Gorge. The friction traverse of this façade is interspersed with brush. In early season there is usually a snow-bridge, formed by spring avalanches from Clouds Rest, that permits crossing the stream to the north-side route in Lost Valley. It is also possible to continue through heavy brush until within 200 - 300 feet of Pyweack Fall, from which point ascend to right on 35° granite, covered with moss and lichens but sufficiently fractured to be easily climbed. An easy ascent eastward over slabs of Cathedral granite brings one to the "LeConte Notch" from which Waterwheel Valley is but a stroll.

At Low Water — The traverse of Tenaya Canyon at low water, in late August or in September, involves no particular difficulty in route-finding, but the rock-climbing itself is more involved. Bush-whacking is minimized. From the lower end of the Tenaya Creek inner gorge, the course of the stream may be followed to the first waterfall, formed where the stream divides around a chockstone. Below this a detour to the left is made, and a scree-covered, sloping shelf some 50 feet above the stream, is followed until well past the fall. Returning once again to a point on the stream marked by a split rock through which lies the only easy route, climb approximately 150 feet above the stream on brush covered slopes, until it is possible to continue eastward into lower "Lost Valley" over a series of narrow, exposed ledges, including the "Initial Ledge," which bears the dates of the annual trips made by S. L. Foster, from 1909 to 1937.

Ahwiyah Point (6925).

From West — First ascent obscure, probably by Charles W. Michael. First recorded ascent, September 3, 1933, Richard G. Johnson, Jack Riegelhuth, Hervey Voge, who climbed from Mirror Lake. It is most easily climbed from above.

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Northeast Gully — First recorded ascent, August 5, 1937, David R. Brower, Morgan Harris. Exact route-finding is essential. Several have failed. Ascend avalanche debris below gully to easy slabs leading to 30-foot waterfall. Pass this over easy ledges to left (E.) and enter gully proper, from which point it is impossible to leave this route. The first barrier is a 200-foot cliff stretching along the season.

Half Dome - From Mirror Lake (8852). First ascent unknown. Donald Buchanan, Yosemite, has made more than 20 ascents of this route. The first barrier is a 200-foot cliff stretching along the entire base. This can be passed by an easy gully at the W. end. Upon reaching the ledge on top of the cliff, traverse E. to polished massive granite at angles of 35° to 40° rising just W. of the watercourse. The principal problem is to avoid brush without getting onto rock of too high an angle. At the base of the tremendous overhang there is an easy route to the Clouds Rest saddle. There is water at the base of the main face in all seasons.

"Diving Board" - From Mirror Lake (7500). First ascent by Charles W. Michael prior to 1927. Follow preceding route as far as the great face of Half Dome. Until July in a normal year an ice-ax is advisable in ascending the 400-foot 40° snow couloir below the W. end of the overhang. At the head of the couloir traverse upward on a six-foot sloping scree-covered ledge overhanging 1,000 feet of space.

Mount Broderick (6705). First ascent obscure, but probably James M. Hutchings before 1869. A friction climb up the smooth granite of the NE. ridge. There have been ranger-naturalist-conducted ascents for the past six years, a rope being used on but one pitch.

Grizzly Peak - South Arête (6219). Climbed several times by rangers searching for lost hikers. First recorded ascent by M. E. Beatty, Sam King and another ranger. Two gullies ascend the S. wall of Grizzly Peak. The easternmost and most precipitously walled of these is Class 5. The W. side of the arête between them, partly covered with brush, may more easily be ascended to the first notch E. of Grizzly Peak. To approach this route, leave the Vernal Fall trail below its junction with the abandoned Anderson trail.

Sentinel Rock (7000). First ascent obscure, but a popular tourist feat by 1870. In 1886 Mrs. George Bayley was reported as the

only woman to have made the climb. Approaching by the Four-Mile Trail, ascend the gully heading in the notch just S. of the summit. "Gunsight" (5200). First ascent obscure and probably early.

"Gunsight" (5200). First ascent obscure and probably early. This appropriately names the gully between the Middle and Lower Cathedral Rocks. The large chockstone near the top is best passed to the S. (left) on sound angular holds. This pitch is almost Class 4 in difficulty. This route offers an interesting short rock scramble to attractive lunch spots on Bridalveil Creek.

CLASS 4 - Ropes must be used for safety

Although pitons are not required on climbs in this class, their protection may in some circumstances be advisable. A few should therefore be carried.

Lower Brother - "Michael Ledge" (5900). First recorded ascent, in the twenties or earlier by Charles W. Michael. From the S. Base a broad tree and brush-covered ledge spirals high up the E. face, and may easily be followed (Class 1) to a point swept by recent rock avalanches from the Middle Brother. From here the ascent over scree-covered ledges and slabs to the arête which forms the summit is sufficiently exposed to require consecutive roped climbing.

Middle Brother (6850). First recorded ascent, either by Charles W. Michael in the twenties or by Ralph S. Griswold and William Kat in the early thirties. Follow Eagle Creek to about 5850, then climb out to the right and up steep slabs to the arête. The lower point overlooking the Lower Brother should probably be considered the summit of this sloping ridge.

Lower Yosemite Fall - East Side (4420). First ascent, July 22, 1935, by David R. Brower and William W. Van Voorhis. A short distance above the horse trail bridge a series of easy cracks and ledges lead to the E. (right) to a small platform about 40 feet above the stream. From here the route ascends vertically through a shallow chimney and up a difficult friction slab to tree-covered ledges, from which easy climbing and a short descent lead to the top of the Fall.

Washington Column - "Lunch Ledge" (5000). First ascent, September 2, 1933, by Jules M. Eichorn, Bestor Robinson, Hervey Voge, Richard M. Leonard. About 35 ascents. Four hours. Maximum Class 4 difficulty. A very enjoyable climb and ropedown. See Class 5 for route.

Half Dome - Without the Cable (8852). First recorded ascent, 1931, by Judd Emory Boynton and Eldon Dryer. Has been climbed on both sides of the cable. Purely a problem of adequate friction on 46° moderately rough granite.

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"Diving Board" - West Buttress (7500). First ascent, May 29, 1938, by Kenneth D. Adam and W. Kenneth Davis. Three hours. 2500 feet of brush, 500 feet of climbing.

"LeConte Gully" (5925). Probably used by Hutchings as early as 1869 in an attempt on Half Dome. First recorded ascent, July 26, 1912, by James S. Hutchinson and J. N. LeConte. This is the gully just north of Grizzly Peak. It is Class 2 all the way except for one 25-foot Class 4 pitch. Follow the Sierra Point trail until it definitely starts to leave the north face. Follow up the rather broad gully on easy scree for about 750 vertical feet above the trail. At this point a 100-foot 45° pitch can be passed on a rock-garden ledge on the right (S). This leads to a pocket out of which one climbs the short Class 4 pitch at the upper left corner to Class 2 climbing above.

Mount Starr King (9081). Northeast Side. First ascent, August 1876, by George B. Bayley and E. S. Schuyler. From the top of some 30° slabs at the base of the dome, traverse diagonally upward to the right (W.) on 43° massive rough granite 40 feet to a stance on a small ledge. Then climb directly up, following a grass-filled two-inch crack and then along and over two-foot exfoliation shells to the summit.

Southeast Saddle. First ascent, August 23, 1877, by George G. Anderson, James M. Hutchings, J. B. Lembert. An easier route than from the NE. but still requiring care in friction climbing along and over exfoliation shells. Minimum Class 4 difficulty. In climbing trend gradually to the left (W.).

Winter. First ascent, March 9, 1937, by David R. Brower and Joseph Specht. From the SE., after approaching on skis. The final slope was sufficiently free of snow to be climbed in tennis shoes.

Illilouette Fall - West Side (5816). First ascent probably by Charles W. Michael in the twenties. First recorded ascent, September 3, 1933, by Marjory Bridge, Lewis F. Clark, William Horsfall. Glacier Point "Terrace" (5500). First recorded ascent, June 24,

1937, by David R. Brower and Morgan Harris. From an elevation of about 4800 feet on the Ledge Trail traverse diagonally E. along a series of connecting ledges and up under a tremendous overhang toward the terrace that forms the ultimate base of the firefall. The E. end of the traverse is quite exposed and should be well protected. A small tree serves as a splendid belay for a final delicate traverse ending in an open chimney that leads to the terrace. It is interesting here to observe the variety of debris that has come over the cliff through the ages. An attempt to leave the terrace by an upper route was blocked by smooth slabs that did not permit adequate protection.

"Kat Walk" - Middle Cathedral Rock (6551). First ascent, September 1929, by Ralph S. Griswold. Moderate continuous climbing leads up the great chimney between the two higher Rocks to a 70-foot cliff that impedes progress. From the base of this cliff follow a brush-covered ledge out on the face to the right (NE.) for several hundred feet, thence up steep ledges and pitches to the summit.

Leaning Tower (5863). First ascent, probably by Charles W. Michael, date unknown. Approaching Bridalveil Creek by the Gunsight, traverse over moderate friction climbing to the notch S. of the Leaning Tower. From here friction climbing continues over varied routes to the summit, with the higher angle of the slope indicating use of the rope in consecutive climbing.

CLASS 5 - Pitons should be used for safety

Pitons should be removed by the last man wherever possible. Do not count on finding pitons available on the climb. Pitons found in place, even when apparently sound, should be removed and replaced before using.

"El Capitan Chimney" (6750). First ascent, October 9 and 10, 1937, by Ethel Mae Hill, Gordon Patten, Owen Williams. No other ascents. 18 pitons. Two days climbing. From the toe of El Capitan follow up along the base of the W. cliffs to the chimney clearly shown on the map. Chockstones are responsible for seven overhangs which present the principal difficulty. From the notch at 6600 feet a rope-down brings one to the Class 4 climbing of the main gully leading to the summit plateau.

"Lower" Brother - West Face (5900). First ascent, October 21,

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1934, by H. B. Blanks, Boynton Kaiser, Elliot Sawyer. No other ascents. Although the average angle is not high, the rounded character of the holds, polished by winter avalanches, and ten-foot overhanging steps make this a difficult ascent. The route follows closely the angle formed by the intersection of the two lower Brothers.

Southwest Arête. First ascent, July 15, 1937, by David R. Brower and Morgan Harris. No other ascents. Ascend Eagle Creek (W. of Lower Brother) until 300 feet below the prominent black chimney in an angle of the W. face. Traverse SE. on a broad treecovered ledge, where a moderately difficult crack leads up the W. Face about 30 feet. From here a delicate friction traverse leads to the left (N.) where a shelf, a short chimney, and easy pitches continue upward and SE. back to the rounded arête. Climb 50 feet straight up over smooth mossy cracks, in unsound rock, then traverse right (E.) across a smooth gully to a broad ledge. Ascent of a 50foot friction pitch, slanting up and eastward, brings one to the base of the pitch which is the crux of the climb. An open, almost holdless chimney continues at an angle of about 70° just W. of the arête for nearly 150 feet. The first appreciable belay position is fully 100 feet above the base, and intermediate piton protection for the leader is necessary. From the top of the chimney a short Class 5 traverse to the W. leads to the broken S. edge of the upper W. Face, from which it is but a scramble to the summit.

"Arrowhead" (5800). First ascent, September 5, 1937, by David R. Brower and Richard M. Leonard. Four ascents. One piton. A spire on the Castle Cliffs, prominent from Yosemite Lodge. Although predominantly Class 4 there is at least one pitch more difficult. The old Indian Canyon Trail can be located behind the incinerator on the stub road just E. of the postoffice. Follow this trail for about 1200 vertical feet to a point where the trail is about to pass NE. of the Arrowhead. Leave the trail and traverse diagonally upward to the left (NW.) over Class 2 and 3 forested ledges around the S. buttress of the Arrowhead to the deep chimney just W. of the pinnacle. Traverse a horizontal ledge back to the right (SE.) to a tall Douglas Fir at the base of the sharp arête which is followed to the summit. The Class 5 pitch is on an exposed face of 75° with small holds just above the "Half-Way Summit." Most of the route is at a high angle but on enjoyable deep holds. Roping down to

the notch, and then into Indian Canyon, involves 160-foot pitches. Washington Column - "Fat Man Chimney" (5912). First ascent, May 26, 1934, by Virginia Greever, Randolph May, Bestor Robinson. No other ascents. 11 hours. Four pitons. From the base of the chimney separating the Column from the Arches traverse around the corner onto the 65° face. Follow a series of ledges and cracks of very difficult Class 4 climbing, diagonally upward to the right, (NE.) to a drop-off giving views of the tremendous overhangs below the main shaft of the Column. This point is about 800 feet above the talus and 400 feet to the right, (E.) of the starting point. From this point climb directly up 75° cracks and chimneys interrupted by oak-grown ledges, for a distance of about 200 feet. At this point a rather inconspicuous three-foot ledge without vegetation will be found which traverses the face horizontally about 50 feet to the left, (W.). This is known as the "Lunch Ledge" since it is at the end of the four-hour Class 4 climbing. The routes split here and are Class 5 above. Many climbers enjoy the excellent climbing to this point with almost unexcelled roping down as a climax.

Fat Man Chimney, leading directly from this ledge diagonally to the right (E.), is on a 70° face and in the upper portion is only 15 inches wide and of a crumbling nature. From the top continue diagonally to the right into a spacious alcove. From this traverse horizontally back to the left (E.) for 200 to 300 feet, involving a rope-traverse, and continue on into the chimney above the great overhang. A short waterfall is the only remaining difficulty before emerging onto brush-covered sand slopes leading to the summit. The best return is down Class 3 ledges and scree toward Mirror Lake. A final 100-foot cliff requires an adequate reserve rope.

"Piton Traverse." First ascent, May 31, 1935, by Morgan Harris, Jack Riegelhuth, Richard M. Leonard, 17 ascents. Nine hours, placing pitons; two and one-half to nine hours otherwise. Nine pitons.

At the W. end of the "Lunch Ledge" two 12-inch ice pitons will be found firmly placed in a crack too wide for safety in using normal pitons. The ice pitons should not be removed; all others should. Traverse diagonally upward to the left (W.), on an avalanche-polished 65° face with very small and rounded holds. Pitons should be placed for protection but are not needed as direct aid. At the top

of this 75-foot pitch climb upward and somewhat to the right to a small chimney. At its top join Route 1 in the main chimney.

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Grizzly Peak - South Gully (6219). First ascent, June 7, 1938, by David R. Brower and Morgan Harris. The abandoned Anderson Trail to Vernal Fall may be followed high into the talus below the S. gully. Ascend 250 feet, zigzagging over oblique, intersecting ledge planes. Just W. of gully where the ledges run out, rope-traverse down and E. to a narrow ledge which continues its narrowing course to the NE., returning at an angle of 40° to the gully. The lead becomes increasingly exposed as one nears the gully, and handholds are covered deeply with lichens and small plants, so that careful climbing and belaying are essential. The gully may be ascended without difficulty to a cave, which is passed on a very smooth, highangle face to the right. Piton protection is required here. The upper gully rapidly opens out into easier climbing at a diminishing angle, but parties should remain roped until well past the apparent exposure. A moderate scramble brings one to the second notch E. of Grizzly Peak, when the usual ducked route S. of the summit ridge may be followed to the top. See also Class 3.

Panorama Cliff (6250). First ascent, October 12, 1936, by David R. Brower and Morgan Harris. Two ascents. Five hours, placing pitons. Four pitons. From the Nevada Fall trail at the base of Grizzly Peak an immense diagonal, trout-shaped scar may be discerned as the source of one of the largest recent Panorama Cliff rockslides. The route follows, with but slight variation, a line drawn from the highest talus of the N. face of the cliff, passing immediately above the scar, and continuing upward and SW. into the broken and forested upper face. The first pitons are used to protect the lead (through brush) to the shelf just above the talus. One should be on the lookout for large loose blocks when climbing above the scar. From this point it is quite possible that a number of routes may be followed. Except for the one remaining Class 5 pitch the ascent of a short chimney W. and around a corner from the scar — the remainder of the climb is Class 4. Although the brush and scree slopes may not seem to require consecutive climbing, the considerable exposure justifies it.

Glacier Point - East Face (6750). First ascent, May 28, 1939, by Raffi Bedayan, David R. Brower, Richard M. Leonard. No other ascents. Five hours. Ten pitons. This route follows close to

the first watercourse south of Glacier Point, directly opposite Sierra Point. From the Fish Hatchery follow the pipe line road to the settling basin. Turn right and follow a small stream to the cliffs. A chimney just to the left (S.) of the stream constitutes the route all the way. Climbing is maximum Class 4, as an average, with two maximum Class 5 pitches.

"Church Tower" (5500). The pinnacle just E. of the Lower Cathedral Spire. First ascent, October 12, 1935, by Kenneth Adam, Olive Dyer, Morgan Harris. Two ascents. Ascend broad talus chute to E. side, ascend easy tree-covered ledges 50 feet to NE. corner, up 50-foot open chimney. Walk along a "Rue de Bicyclettes" on SE. side of steep arête just below crest 100 feet and return to ridge. Cross the prominent notch by very exposed traverse on SE. side and climb summit tower from N. over smooth, 50° face.

Lower Cathedral Spire (5625) "Main Ledge." First ascent, November 4, 1933, by Jules M. Eichorn, Richard M. Leonard, Bestor Robinson. 13 ascents. One hour. See Class 6 for description of route. After the first Class 5 pitch the balance is Class 4 furnishing an enjoyable climb with a definite objective.

"Cathedral Chimney" (6300). First ascent, October 11, 1936, by David R. Brower, Morgan Harris. Two ascents. Four hours. Moderate continuous climbing leads up the floor of the spectacular broad chimney between the two highest Cathedral Rocks to the base of a 150-foot, 70° pitch in the upper portion of the gully. This Class 5 pitch stopped at least the first five attempts to ascend the entire gully. It may be climbed by ascending the face a few feet to the right of the narrow, overhanging chimney near the S. wall. From here it is easy going to an overhanging chockstone, which, when dry, may be climbed with the aid of a small tree growing near the top. A more difficult variation, over smooth slabs to the right of the chockstone, has been used in the early season, when the chockstone becomes a miniature waterfall. The remainder of the gully is easy.

CLASS 6 - Pitons must be placed for direct aid

In this class, two climbing ropes should be used and an ample supply of sling material carried. The climbs in this class will be found to be Class 5 in difficulty if pitons are available from previous ascents.

"Split Pinnacle" (5100). First ascent, May 28, 1938, by Raffi

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Bedayan, Muir Dawson, Richard M. Leonard, Jack Riegelhuth. No other ascents. Follow the W. fork of Eagle Creek to the 5,000-foot contour and circle back to the SW. corner of the Pinnacle. An easy upward traverse on the valley side of the W. Pinnacle, past its Class 3 summit, brings one to an ample ledge beneath the 25-foot 117° summit pitch. A shoulder-stand and three well-placed pitons with slings enable the leader to grasp excellent hidden holds on the edge of a ledge on the extreme left. Use of minute transient footholds enables the arms to pull one up onto the ledge from which the summit is easily reached.

"First Error" (6050). First ascent, May 29, 1937, by David R. Brower and Richard M. Leonard. No other ascents. Since the unclimbed Lost Arrow just left of the benchmark at Yosemite Point has facetiously been named the "Last Error," its first great ledge 350 feet from the base is appropriately called the "First Error." The route, after reaching the base, is terrifyingly clear. It consists in ascending between a 65° to 70° buttress and the 85° face on small holds highly polished and rounded by winter avalanches. Pitons in 30 places for safety and 5 for direct aid were used. The route is of particular interest as opening the way to the 400-foot 80° chimney (apparently climbable) leading to the still unclimbed "Second Error." Above, the chimney continues at 85° to 90° for a further distance of 300 feet to the "Third Error," the notch joining the "Last Error" to the wall. Here is the scene of the heroic, if legendary rescue of the Indian brave by his sweetheart.

"Yosemite Point Couloir" (7250). First ascent, June 8, 1938, by Torcom Bedayan, David R. Brower, Morgan Harris. No other ascents. SCB 1939, 24:3, pp. 63-68.

This is the prominent gully between Yosemite Point and Castle Cliffs. It may be ascended full length from the valley floor at the incinerator or the lower half may be by-passed by the Arrowhead approach route. Difficulties begin shortly above the halfway mark, where a moderate scramble ends at the base of a 30-foot 55° slab of avalanche-polished granite. This may be ascended directly with the aid of a small crack, or may be passed on a more exposed route 15 to 20 feet to the right. The next problem is a large chockstone, which may be passed in a Class 6 pitch starting at the base of the E. wall some 50 feet below the chockstone. Ascend 20 feet to a narrow, scree-covered ledge diagonally up to the N., from the upper end of

which it is possible to rope-traverse to the top of the chockstone. Farther up the couloir a second chockstone may be climbed directly; a third may be passed by a four-sided chimney behind it. From here the couloir floor rapidly steepens and narrows. From the top of the narrow chimney where the route seems to end, traverse left to an open 120° chimney and with cross-pressure ascend the 45-50° polished granite to an overhang at the top. Piton protection is essential for the lead up the overhang. From this point the couloir rapidly opens out, and it is but a scramble to the top.

Royal Arches (5400). First ascent, October 9, 1936, by Kenneth D. Adam, W. Kenneth Davis, Morgan Harris. Two ascents. Eight hours, seven pitons. From the base of Royal Arch Cascade traverse diagonally upward to the right (E.) along steps of a broad ledge, then up a steep, open chimney, very smooth and difficult. A 30-foot pitch at the limit of friction leads to easier pitches, where small ledges may be ascended until they give out on a smooth face. It is then necessary to make a difficult rope traverse left (W.) to a very narrow ledge, which widens out during a 100-foot traverse to the W. Here a rib juts out, interrupting the ledge, but can be passed by a very difficult rope traverse from a tree. Then traverse 20 feet to the foot of a dead tree "bridge" crossing to a rib 15 feet high. From the tree-trunk ascend steep cracks, cross steep waterpolished granite to the W., and continue to the top of the wall.

Lower Cathedral Spire (5903). First ascent, August 25, 1934, by Jules M. Eichorn, Richard M. Leonard, Bestor Robinson. SCB 1935, 20:1, p. 107. Appalachia — Dec. 1934, 20:9, pp. 177-183. Nine hours from base if all pitons must be placed; three to five hours otherwise. 14 pitons. Nine ascents.

Circle the Spire by the talus on the E. to a point 75 feet below the notch between the Spires. A diagonal upward traverse to the right on very small holds on a 75° face is an initial test of severe Class 5 difficulty. The route is then Class 4 for nearly 200 feet up a semi-chimney, to the prominent wide ledge. Traverse to the SE. right-hand end of the ledge to the top of a detached block standing on the ledge. Class 6 climbing begins here.

A shoulder-stand enables the leader to start the ascent of 20 feet of minute, rounded holds on an 83° face to an almost inadequate sloping ledge where a piton will be found or can be replaced. A traverse, across the face to the left and diagonally up, brings one under the "Flake," 30 feet and 90° above the belayers. Any pitons found there must be replaced and determined to be very sound. The second climbing rope should now be snapped onto these pitons and 10 feet of slack of the first rope pulled through the many carabiners and allowed to hang. Throw a loop of sling rope over the point of the Flake and tie back into the sound carabiners. Mount to the top of the Flake and belay from its top rather than out of communication on the wide platform above.

A choice of routes is now offered. The first ascent and several others continued a direct attack up the 80° face just to the right of the deep chimney. This is severe Class 5. A better route is to traverse the wide ledge around the corner to the right into a Class 4 chimney. At the top of either of these 80-foot pitches a short Class 4 pitch brings one to easy climbing to the summit. The rope-down over the Flake is 105 feet so a check as to the length of rope is important.

Higher Cathedral Spire (6114). First ascent, April 15, 1934, by Jules M. Eichorn, Richard M. Leonard, Bestor Robinson, SCB 1934, 19:3, pp. 34-37 (with photos and sketched route). Appalachia Dec. 1934, 20:9, pp. 177-183. Twelve hours from base if all pitons must be placed; three to seven hours otherwise. 38 pitons. Nine ascents.

The flood channel near the Cathedral Rocks will be found an easier approach than the forest. Route lies up the SW. face of the Spire at an average angle of 77°. A short Class 4 crack brings one to the wide ledge known as "First Base." There, Class 6 climbing requires several pitons to surmount an overhang in an open chimney. At the top, 20 feet above the belayers, a delicate traverse is required to the left (W.) around the corner to the "Bathtubs," remarkable solution ledges on a 77° face. A further traverse of about 15 feet brings one to an expansion bolt protecting a very difficult step into a high-angle crack. Follow this crack diagonally upwards to "Second Base."

Above this, the 80° chimney of relatively unsound blocks can be climbed by direct attack over the overhang at the top. A sounder and easier route is to make a rope-traverse around the corner to the left (N.) and then up another chimney on excellent holds. From 20 feet higher another traverse to the left onto the N. face brings one to "Third Base." Follow this ledge horizontally around the right (W.) face to the opposite face at the S. base of the summit

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ate A block. Thus far, all ascents have been up a piton "ladder" in a three-eighths-inch crack on that face. It seems worthwhile, however, to attempt to continue the traverse across the S. face to the SE. corner and up an easier chimney there.

Lower Cathedral Rock - Northwest Face (5610). First ascent, September 7, 1935, by Doris F. Leonard, Richard M. Leonard, Bestor Robinson. No other ascents. SCB 1936, 21:1, p. 98. Six hours. Ten pitons.

From near the base of Bridalveil Fall traverse diagonally upward to the left (E.) over forested Class 3 climbing for 1000 feet to the base of a series of overhangs. Traverse horizontally left (E.) across the chimney and then diagonally upwards to the left on steep and exposed climbing with excellent holds to a half-inch ledge on a 70° face beneath a 170° overhang extending eight feet from the face. By a shoulder-stand from the second man on pitons supplementing the ledge, and protected by an intricate belay system, the leader is barely able to ascend a 90° chimney beside the overhang to a cave beneath a second overhang 15 feet above the second man. A traverse to the right (W.) on almost inadequate holds enables the leader to reach a large platform above the overhang. At least 80 feet of rope should be allowed for this lead. Above the platform excellent Class 4 climbing at 85° on remarkably fine holds brings one to an easy walk to the summit.

Pulpit Rock (4195). First ascent, May 29, 1939, by Raffi Bedayan, Carl Jensen, Randolph May. Two ascents. Three and one-half hours. Six pitons.

At the SE. corner climb a large tree to the topmost branch which leans toward the rock. A traverse towards the notch of the Pulpit will bring the climber onto a well-broken face. Advance vertically until reaching the cave underneath a huge overhang. Precaution should be taken not to dislodge blocks in the vicinity of the cave. The route lies on a well-rounded 70° face. Thick horizontal pitons with slings will assist in overcoming this pitch. Care must be taken when reaching the overhanging gully not to dislodge the loose chockstone. A spread-eagle is the key to this pitch. Climb out of this gully toward the notch, descending upon a broad ledge and along this to a large platform seen from below. From here the summit is reached by climbing a three-inch crack on a 40° face.

Geographical Index to Yosemite Climb Classification

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tions aken oose at of and the (Climbs are listed in their geographical sequence, starting at the westerly end of the north side, continuing around the walls to the westerly end of the south side of the Valley. Climbs are listed within each class in the same order.)

CLIMB	CLA	SS	CLIMB	(CLA	SS
El Capitan Gully		3	Diving Board, west buttress			4
El Capitan Chimney		5	LeConte Gully			4
El Capitan (by trail)		I	Grizzly Peak			
Split Pinnacle		6	Grizzly Peak, south arête .			3
Lower Brother, west face		5	Grizzly Peak, south gully .	*		5
Lower Brother, southwest arête		5	Mount Broderick			
Lower Brother, Michael Ledge		4	Broderick Canyon			2
Middle Brother		4	Liberty Cap			
Eagle Peak (by trail)		1	Half Dome (by cable)			
Lower Yosemite Fall		4	Diving Board (from south)			2
Lost Arrow, "First Error"		6	Mount Starr King			4
Arrowhead	0	5	Panorama Cliff			5
Yosemite Point Couloir	0	6	Illilouette Fall		,	4
Royal Arches	٠	6	Glacier Point, east face			
Washington Column, "Lunch			Glacier Point "Terrace"			4
Ledge"		4	Sentinel Dome			I
Washington Column, "Fat Man			Sentinel Rock			
Chimney"		5	Church Tower			5
Washington Column, "Piton			Lower Cathedral Spire, Main	1		
Traverse"		5	Ledge			5
North Dome (by trail)		1	Lower Cathedral Spire			6
Basket Dome		2	Higher Cathedral Spire			6
Mount Watkins		1	Cathedral Chimney			5
Tenaya Canyon		3	Cathedral Rocks, "Gunsight"			3
Clouds Rest (by trail)		1	Cathedral Rock, Lowest, north	hw	est	
Quarter Domes	٠	2	face of	4.		6
Ahwiyah Point		3	Cathedral Rocks, "Kat Walk"			4
Half Dome, from Mirror Lake		3	Cathedral Rock, Highest			I
Half Dome (without cable) .		4	Leaning Tower		*	4
Diving Board (from Mirror Lake)	3	Pulpit Rock			6

Sierra Club Cups

BY BLANCHE STALLINGS

If I had to be a cup, and wanted a delightful, varied, interesting, and useful career, I think I'd say, "Make me neat and smooth, out of tin, stamp these words on me, 'Sierra Club of California,' and hang me on the belt of a good mountaineer."

Bright, little Sierra Club cups! Over the mountains they go, dipping pure, sparkling water for thirsty high-trippers. They dip from streams — streams over trails, streams over granite, streams in forests, streams in meadows, white streams cascading down from the blue sky, clear streams bubbling up from the ground. They dip from lakes — blue, wind-ruffled lakes, quiet, reflecting lakes, greenblue, half-frozen lakes, dark, silent, star-filled lakes. From streams and lakes, changing and changeless in sunshine and shadow, cups of cold water.

But what do the cups do when the high-trippers aren't thirsty? They are by no means idle, as the following observations disclose.

Gathered about cheerful, little campfires, in various choice spots, small groups of friends rest and talk. The fires burn brightly, and the billy cans get blacker. Around the circles go the tea bags, the sugar lumps, the precious lemons. The tea parties are on, and the cups have become teacups.

But have they? Listen.

"This is the top!"

"What a climb!"

"What a view!"

"That's Mt. So-and-So, and there's Lake Such-and-Such."

"Here's a snowbank! Got any jam? I have a lemon. Let's have sherbet."

The high-trippers are on peaks and passes, and the cups are sherbet glasses.

Water dippers, teacups, sherbet glasses — delightful. The cups are also seen, frequently, in less cuplike aspects.

For example, two high-trippers are crossing a stream on a small, wet, slippery log. As soon as they are safely across, one of them, to make the way easier for other log-walkers, scoops a cupful of sand and scatters it over the log. Thus a thoughtful mountaineer discov-

ers that the cups qualify for heavy duties, such as sand-shoveling.

Again, high-trippers are going over the snow. The way grows steep, and the leader suggests using the cups to scoop out better steps. The cautious climbers find that the cups make excellent snow shovels.

What's that flashing on the top of the highest peak over there? Looks like mirror signal-flashes. Just another Sierra Club custom; a party of climbers has reached a summit, and is announcing its achievement by means of flash-signals, not from mirrors, but from Sierra Club cups!

Now high-trippers are making camp. They need hip-holes and shoulder-holes for beds, and reach for the cups. The resourceful campers want to be comfortable, and the cups dig hip-holes.

Oh, look, quick! Where the party is crossing the snow! A woman just slipped at the top, and is sliding face-down, head-first, down the steep grade! But something is holding her back. What can it be? Why, it's the cup! Hanging on the front of her belt, it has become, in this moment of extremity — a brake!

Useful, adaptable, versatile, indispensable, shiny, little tin cups! What are they up to now? At beautiful campsites, beside various streams and lakes, there are great numbers of them, for the most part sitting on the edges of aluminum plates. Some are full of soup, some of salad, some of stew, jello, bread, pudding, stewed fruit, vegetables. No question about what's going on. The high-trippers are hungry, and the cups are full of food!

In a large assembly of mountaineers and cups, such as this, there must be some good close-ups. Yes, here's one.

It's day-in-camp breakfast time. The sun shines warmly on trees, rocks, stream, meadow, and high-trippers.

"Is this the hotcake line?"

"Yes, this is the hotcake line."

Everyone has a plate. But no; there's the club chief, and he has no plate. Only a cup and spoon. What's he doing in the hotcake line with only a cup and spoon? How can he get hotcakes into a cup without ruining them? Will he fold them, crush them, or let them droop over the edge? The syrup will all run off if they ——. Oh, he's getting his cakes now! Well, look at that!

Into the cup go the hotcakes. They don't seem at all uncomfortable, either; sort of fold in neatly. Wonderful cups! Adequate even

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nd ovfor hotcakes, as the president proves. Or perhaps he just knows how, like the "diamond hitch," or his "way with a burro."

Here's another close-up.

It's dinner time, the sun is behind the mountains, and the air is crisp and cold. Down at the end of the line, coffee is being ladled out of a big kettle into Sierra Club cups. Along comes a member of the Outing Committee. He is busy talking to someone, and sticks out a cup. Oh, what a sight this will be! The cup has obviously served as salad plate. As the hot coffee fills the cup, the lettuce floats wiltingly. Still deep in conversation, the committeeman walks away, apparently unaware of anything unusual about his coffee.

Quite a cupful, but the Sierra Club cup can take it! On second thought, perhaps the honor should go to any man who can help plan outings, lead trips, rescue lost hikers, do rope tricks, play an accordion — and drink coffee which is flavored with salad dressing and garnished with limp lettuce.

What is the vital and eternal question connected with Sierra Club cups? There must be one, else why is the handle, the sturdy loop of wire which slips so smoothly over the belt, gracefully curved in a perpetual question mark? Every cup-user would have his own answer to the question, "what is the question of the cup?" Every answer would be a good question — unquestionably.

One notably ingenious cup-user thought the question might be, "How can I keep my cup from skidding when it is perched on logs or rocks?"

The answer was four neat hob-nails fastened to the bottom of his cup. He then promptly lost the cup in the Ten Lakes region of the High Sierra. At present, it is supposed to be sitting up there beside one of the ten lakes, if it hasn't fallen in. It may be seen by anyone who can find out which lake it is beside, or in.

One answer to the question of improvement raises a question for all Sierrans, namely, "Will the Sierra Club cups of the future have hob-nails?" If so, how many, and will they be a permanent fixture, appearing on all the cups, or will they be a distinctive feature, like the engraving and chromium plating on a few of the present-day cups?

Well, the only way to find out, for sure, about the cups of the future, and the future of the cups, is to go with them. That means pack up the dunnage bag, pull on the boots, shoulder the knapsack,

and get out on the trails that climb to the high country. Enjoy the glorious, snow-streaked, rain-washed, sun-drenched mountains, with the unofficial, shining Sierra Club insignia!



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Sierras of the South

By WELDON F. HEALD

WHEN a northern Sierra Club member, in good standing, said to me last summer, "All you have down south is desert mountains," I thought the Club's right hand should know a little more about the environment of its left.

I know that to write in glowing terms of anything southern Californian, natural, man-made, or climatic, is to be accused of being in the pay of the Los Angeles Chamber of Commerce. Mountains are no exception. So at the start I shall disclaim such a connection and hurriedly admit that the ranges of southern California suffer from their proximity to the great Sierra Nevada. They are like the opossums at the zoo — somewhat overshadowed by the elephants next door.

The southern Sierra Nevada being now an easy five-hour drive from Los Angeles, one cannot blame the mountain enthusiast for packing his kit and heading for that land of glaciers, Big Trees, 14,000-foot peaks, and mountain lakes. Nowhere else in the world is there such wild and beautiful country so easily accessible. And it belongs equally to the North and the South. But the southern Californians have, right at their own back door, seven mountain ranges stretching one after the other in a great arc 250 miles long. Although the Sierra rightly claims our summers, these southern mountains are well worth climbing and exploring in the spring. autumn and winter. True, the peaks are not so high nor, as a rule, so difficult; natural lakes are few; and, to a northerner, the forests appear somewhat patchy. But hidden away among these tumbled mountains are running streams, green meadows, little tarns, and forests where the sun-filtered peace is broken only by the soughing of the pines. What more can you ask of back door mountains?

These seven ranges include Tehachapi, Sierra Pelona, Sierra Madre, San Bernardino, San Jacinto, Santa Rosa, and San Diego mountains. They form a great barrier, sometimes twenty miles wide, separating the fertile valleys of the coast from the inland deserts. Although these ranges resemble each other in having common family characteristics, each has a distinct personality different from its neighbors. The central core of the higher ranges is granite,

as in the Sierra, but of a disintegrating variety, which precludes the formation of great cliffs and pinnacles. Instead, the summits are rounded, often dropping away to steep, unstable slopes that plunge into canyons thousands of feet below. Geologically, these mountains are young and lively, and the communities at their foot sometimes suffer from their growing pains.

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There are three main altitudinal zones of vegetation. Below 5,000 feet is the land of the chaparral — an almost continuous blanket of thick, low-growing shrub, thorny, dry, and well-nigh impenetrable. Up hills, across ridges, and down the steepest slopes marches the chaparral — monotonous, persistent, and inhospitable. I have met lovers of the chaparral and I have sometimes felt its lonely, shadeless fascination, but to most of us the oases in this zone, the shady, fern-lined canyons, arched by oak, sycamore and alder, have the greatest claim on the affections.

The pine forests begin suddenly at 5000 feet, but outposts of desert fir and oak extend far below this on north slopes and in moist draws. The yellow and Jeffrey pines are the principal trees, interspersed with incense cedar, sugar pine and white fir. The stands are rarely as heavy or varied as in the Sierra, underbrush is light, and the trees are farther apart, making a more open, sunny forest in which each gigantic pine and new-born seedling is an individual.

Above 8000 feet, the timber consists almost wholly of lodgepole pine, mixed sparingly with limber pine and white fir. This silent, upper forest, where the snow lies deep and long, retains the open aspect of the yellow pine belt, each tree growing to large size. In some localities the lodgepole pine divides near the ground into four or five huge branches — one more variation of this cosmopolitan tree which grows from Alaska to Mexico and from sea-level to timberline. The gray, stony slopes, yellow trunks and sparse, light green foliage make these upper forests different from any other, and they exert a grim fascination difficult to describe.

True timberline is represented, but only above 11,000 feet, on the two highest summits of the San Bernardino Range. San Antonio's bare crown, however, shows all the characteristics of timberline a thousand feet lower. This disparity in the limits of tree growth on mountains not fifty miles apart is probably due to the more exposed and windy situation of San Antonio, which stands guard

over what is southern California's draftiest doorway — Cajon Pass.

The three highest ranges are nearest to Los Angeles and the populous San Gabriel Valley. Their 10,000-foot peaks, standing like sentinels above the lowlands, are familiar daily sights to two million people — gleaming white in winter, blue-gray or brown in summer. There is hardly a place where one of them is not in

sight.

The Sierra Madre, locally called the San Gabriel Mountains, forms a sixty-mile wall north of the Valley. Its line of 8000- and 9000-foot peaks is dominated by Mount San Antonio, "Old Baldy." 10,080 feet high, the best known and most frequently climbed of all southern California mountains. The Sierra Club's Harwood Memorial Lodge nestles among the pines and firs at its base, while the Ski-Mountaineers have their own hut 8700 feet up on its southeast slope. The Sierra Madre is a rugged range of high relief with deep canyons winding among percipitous mountains. The North Fork of the San Gabriel River, between San Antonio and Mount Baden-Powell, follows one of the deepest gorges in North America. However, Forest Service and county roads reach far back into the range to hidden resorts and camp grounds. There are two small primitive areas and several county parks, popular the year 'round. Each winter a ski jumping contest is held at Big Pines, and each summer a forty-four-mile mountain marathon, referred to by sports writers as "the Bunion Derby of the Wilderness."

Farther east are the San Bernardino Mountains, a complicated uplift, twenty-five by fifty miles in extent, containing more lakes, heavier forests, and higher peaks than all the other ranges combined. On the west is a rolling plateau, 5000 to 8000 feet high, upon which are located the popular Arrowhead and Big Bear Lakes; rising in the east to a cluster of 10,000-foot summits topped by Mount San Gorgonio, is "Grayback," 11,485 feet high, southern California's highest mountain. This high country, included in the San Gorgonio Wild Area, approaches true alpine conditions; a heavily-wooded valley leads up to extensive meadows, and on to two mountain lakes surrounded by a dozen peaks from 10,000 to 11,500 feet high. There is plain evidence of recent glacial action; snow often lingers on the higher slopes until late August, and Fourth of July skiing has been enjoyed on the north side of "Grayback" and Mount Jepson. It is in this high alpine basin

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that skiers find runs comparable to the most famous of the Swiss and Austrian Alps, and this fact justifies the Ski-Mountaineers in their aim "to make known the fact that we have as fine and as accessible ski slopes in California as are to be found any place in the world." In fact, the San Bernardinos have recently been discovered by skiers, and each winter sees an increasing number of enthusiasts invading the mountains for a day, or a week-end, on the powder snows of Keller Peak, Big Bear, or San Gorgonio. The Sierra Club maintains another ski hut at Snow Valley, the center of the Keller Peak district. Here there are a ski tow, a ski store, ski instructors, and nebulous but ambitious plans by "Hollywood interests" to make Keller Peak a bigger and better Sun Valley.

Southeast, across San Gorgonio Pass, is southern California's most spectacular mountain, Mount San Jacinto, 10,805 feet high. Its sheer north face, rising in forbidding gray precipices two miles into the air above the desert, is reminiscent of the east side of the Sierra. Those who have made the San Jacinto North Side Climb have reason to be proud of their achievement, although the rock-climber has the opportunity to break his neck on any side of this mountain. All around San Jacinto are clean cliffs, ridges and domes of massive granite in the best Yosemite tradition. The special possession of Sierra Club rock-climbers is Tahquitz Rock. Each week-end, devotees can be seen scrambling across its impossible-looking faces, following "Angel's Fright" and "Fingertip Traverse."

San Jacinto's upper slopes, now included in a State Park, consist of shallow, open valleys — a world of meadows, alpine woodlands, even a mountain lake, suspended 9000 to 10,000 feet directly over the desert.

The four other ranges are lower and are farther away from the centers of population, but there are innumerable trips for the day or week-end to be found among them, and the views from Mount Pinos in the north and Toro Peak in the south are worth going far to see.

With mountain heights of such interest and variety, it is unfortunate that southern California ranges continue to be judged by their sere, south-facing lower slopes; for behind these flood-torn, fire-scarred, inhospitable flanks is another world. The southern Californian can leave his home in the early morning, having the

choice of rock-climbing on Strawberry Peak, or wandering the pine-shaded trails of the Sierra Madre, swimming in a mountain lake, or looking from the Pacific to the Nevada desert from atop a 10,000-foot peak; he can hear his ice-ax ring and the ice chips hiss down a snow slope, or let his skis run in linked christies and the fast, straight schussfahrt down the 3000-foot "Big Draw" of San Gorgonio. He may do any of these things and yet that night turn off the light by his own bedside. In fact he can be a live-at-home mountaineer and like it.

Southern Californians have had to live down the exuberant "Oranges and Snow" advertising of former years, but when they realize that Los Angeles and Vienna are the only two cities of over a million population in the entire world which are fortunate enough to have great ranges of mountains at their doorsteps, the Angelenos, like the Viennese, will become proud of their mountain heritage and learn to love, enjoy and understand it.

Yes, the Sierra is the big show — the elephants. But the southern mountains aren't bad — for opossums.

An Ascent of the Matterhorn

BY DAVID STARR JORDAN

One of Dr. Jordan's most popular lectures was this account of his ascent of the Matterhorn in 1881. It was published in his little volume, "Science Sketches," Chicago, 1888, and in a new edition of the same book, in 1896. An abridgment appeared in Dr. Jordan's autobiography, "The Days of a Man," 1922. It is reprinted here by the kind permission of Mrs. Jordan. No changes have been made in the "Science Sketches" text other than the omission of a letter from the guide, Baptiste, at the end.—F. P. F.

N OLD MINER of '49 whom I once met in California said to me as we came in sight of the snowy crests of Tuolumne and Calaveras: "These mountains are not appreciated in California. We used to dig and dig them, and that was the end of it. The fact is, stranger, a man ought to have two lives, — one to get a living in, the other to look at the mountains."

But there are some on whom the mountains have the first claim; and so there has arisen the Alpenclub, — the guild of mountain-lovers whose "feet are beautiful upon the mountains," and to which such men as De Saussure and Agassiz and Tyndall and Balfour have been proud to belong.

And thus it happened that on the tenth day of August, 1881, a party of young people from Indiana, mountain-lovers of varying degrees, walked over the snowy pass called the Matterjoch, which leads from Italy across the Pennine Alps into Switzerland. And ever before us and above us as we came up the green valley of Tournanche, ever before us as we toiled up the pass, — above us everywhere, dark, majestic, inaccessible, rose the huge pyramid of the grandest of the Alps. No one who has ever seen it can ever forget its form. It burns itself into the memory as nothing else in all Europe does. Shut your eyes for a moment, you who have been at Zermatt, and straight before you and above you, its long hand clutching at the sky, you will see the Matterhorn! It is not the highest mountain of the Alps. Its gigantic neighbors — Monte Rosa, the Mischabelhorn, the Weisshorn, as well as Mont Blanc — are all higher, — a little; but no other mountain in the world makes such

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use of its height as the Matterhorn. Other high mountains have great rounded heads, white with the snows of eternity. Their harsher angles are worn away by the long action of the glaciers. But the Matterhorn is a creature of the sun and frost. No glacier has worn its angles into curves. Its slopes are too steep for snow to cling to, and all the snow which winter or summer falls upon it rolls down its sides and lies in three great ice-heaps at the bottom. These are the Furggen glacier, the Matterhorn glacier, and the glacier of Tiefenmatten.

We had wandered about Zermatt for a day or two, seeing the sights in the usual way, and all the while the Matterhorn hung above our heads and dared us to come. At last we could stand it no longer; and one evening when the "stalwarts" were gathered together on the stone-wall in front of the Hotel Monte Rosa, Gilbert said unto Beach, "We must do something big before we leave this place. Let us go up the Matterhorn!" And Beach said, "We must indeed. I will go if Jordan will."

But Jordan felt doubtful. He knew that a mountain which eclipsed the full moon would be a hard road for a heavy man to toil up. Besides, the story of the first climbers was fresh in his mind. But the boys were persistent, and they said, "You have talked and talked about mountains, and you have never done a single big thing among them; and it is time you did!" And so they kept it up. And I remembered that Tyndall had thought it worth his while to try again and again to go up this mountain, and so had my Italian namesake, the geologist Giordano. Then why not I?

At last we three shook hands upon it, and went back to the hotel to make arrangements. Afterwards three others joined us, making six in all.² And we sought out "John the Baptist," and made him our chief guide, and directed him to provide food and ropes for eleven, and we were "in for" the Matterhorn.

Meanwhile the boys wrote letters home, — letters full of descriptions of the Matterhorn, which kept their mothers and sisters awake o' nights for a week. And the sketches of the mountain with which they embellished them were wonderful to behold. In the evening some of them strolled out to the little graveyard at Zermatt, — to

¹ Signor Felice Giordano, first Italian climber to reach the summit of the Matterhorn, 1866.—Ed.

³ Professor Charles H. Gilbert, Professor Melville B. Anderson, Mr. William W. Spangler, Mr. William E. Beach, Mr. Walter O. Williams, and the writer.

the tombs of Hadow, Hudson, and Michel Croz, the first victims of the Matterhorn, — "for inspiration," they said; and some of them composed epitaphs, which they have not yet needed.

At one o'clock the next morning the porter of the Hotel Monte Rosa knocked at our doors, and announced that breakfast was ready. We rose in a hurry, ate everything on the table, — our invariable custom in Switzerland, — and by half-past one our alpenstocks were rattling loudly on the stone pavements of the narrow streets of Zermatt. Our five guides were ready, each laden with ropes, ice-ax, and provisions, and we were on the road up the mountain.

Let me say a word about the guides. Most of the able-bodied men in the Swiss valleys are in the summer guides or porters in the mountains. The average guide is a rather heavy, slow-spoken fellow, who buys a good deal of food for you and eats it himself, who drinks great quantities of villainous sour red wine at your expense, hauls you around like a bundle of meal, and finally, as he leaves you, waxes eloquent on the subject of Trinkgeld. But there are guides and guides, and some of them are men of force and intelligence, who have, and who deserve to have, a wide reputation. Among those, known all over Europe for strength and courage, was Michel Croz of Chamouny, who fell from the Matterhorn in 1865. Among those destined to be thus known is the young man whom we fortunately selected as our chief guide, — Jean Baptiste Aymonod of Val Tournanche.

"John the Baptist," as we called him, is a very robust and muscular young man of medium height, with a smooth face, light hair, gentle, blue eyes, and a firm, expressive mouth. He is soft-voiced and slow-spoken, — as are most of the Swiss guides, — and he is endowed with a graciousness of manner and purity of speech hardly to be looked for in a herdsman's boy, risking his life on the rocks and ice for two hundred dollars a year. His face shows the effects of mountaineering, for his nose has sometime been broken by a falling stone.

Our next guide, Victor Maquignaz, is older than John, and larger,
— a big burly mountaineer, brave and trusty, who speaks French
with variations, a surprising dialect born of the mountains, in a
high, uncertain falsetto, like the voice of a wheelbarrow that needs
oiling. Next came Francois Bic, — a tall, intelligent, positive fellow, a good mountaineer, but who would be better liked if his eye

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were less closely fixed on the Trinkgeld. Next came his brother, Daniel Bic, — a muscular man in full beard and spectacles, looking like a German Doktor, who had never been up the Matterhorn before, and evidently wished never to go again. Finally, there was Elie Pession, whom we surnamed "the Invalid," — a strong-looking fellow with a heavy black beard, whose heart sank into his boots when he stood in the presence of danger.

All these guides were French, and all belonged to the valley of Tournanche, — the deep valley which extends to the southward from the Matterhorn on the Italian side, corresponding to the valley of Zermatt, which extends on the Swiss side toward the northward.

As we started out that night, it seemed that we had never seen the world look so beautiful. The moon was full, and hung gracefully over the left shoulder of the Matterhorn, and the sky was without a cloud. Through dark fir-forests we went, by the side of a foaming torrent, then over flower-carpeted pastures and steep grassy slopes, the great mountain ever in front and the glistening snows of the Dent Blanche and the Breithorn flanking it on either side.

At sunrise we came to the first cabin, at the foot of the upper pyramid of the Matterhorn, on a narrow crest of rocks which separates the Furggen glacier from the Matterhorn glacier. This cabin, built by the Swiss Alpenclub, is quite a comfortable place, with plenty of straw, blankets, and fuel. Many who climb the mountain spend the night here, setting out at sunrise for the summit. The walls of the cabin are covered with lead-pencil inscriptions in every tongue. One of these, in particular, is noteworthy as being higher above the sea-level than any other poetry in the English language.

"Little Matt Horner
Sat in the corner,
And vowed he would not be climbed:
We tried it, you know,
But found so much snow
We very politely declined."

This is not much as poetry; but it is worthy of notice that in a climate and at an altitude in which ordinary spring poetry is frozen through and through in a minute, this little blossom has survived.

For a few moments we watched the sun rising over the glaciers of the Weissthor pass, and then John the Baptist had us again under way. We stood right at the foot of the mountain; but the nearer we came the steeper it looked, and there was no sign of a possible path. Precipices of bare, loose rocks, with gullies filled with snow and slippery ice, were before us, and nothing else. We went on a little way until we came to a snowy ridge, on which was a heap of large stones. "This," said John the Baptist, "was the chalet of Monsieur Whymper." Then the path began to grow narrow, and abysses opened below us. John called a halt, and said that we must now be very careful; we must watch nothing but our feet; we must talk as little as possible; we must keep our mouths shut and breathe through our noses; and finally, we must chew chocolate or caramels all the time, - for this, he said, would keep our throats from being parched. This began to look like serious work; so we left off looking at the sunrise and the glaciers, watched our shoes, chewed our chocolate, and moved on.

The path started out along a shelf of rock about a foot wide, the surface of which, in accordance with the southward dip of the strata, slanted toward the mountain. Above the path was a wall of rock some ten feet high, and at the top of this was a similar shelf, but somewhat broader than the one on which we were walking. Below us was a slippery wall of rock, perhaps a hundred feet high, at the foot of which lay the ice of the Furggen glacier. In summer the glacier slides away from the mountain, the supply of snow not being great enough to balance its loss by melting. Between the mountain and the glacier is therefore a deep chasm, or Bergschrund, - a damp, chilly, uninviting looking place, bordered on one side by rocks, on the other by blue ice, from the edge of which often hang long icicles. We walked on in silence above this Bergschrund, thinking that our way would be easier by-and-by, when suddenly our path ceased. At this point John the Baptist left us, and climbing fly-like up the side of the rock, he showed us our path about ten feet higher up on another shelf formed by a projecting stratum. He threw the end of his rope to the guide Victor, who put it around his waist. Then John stood in the attitude of the Colossus on the edge of the precipice, and hauled him up. Next came my turn, and I dangled serenely over the edge of the mountain, while John and Victor pulled on the rope. This mode of mountain climbing gives a view that you can

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get in no other way of the mountains on the other side. And so one by one came up the rest.

But our path did not improve as we went on. From this point to the top, about six hours' climb, there was not a single yard of level walking or, indeed, of any walking at all. One could not anywhere take three steps without watching each step and making a mental calculation as to whether his feet would hold. There was hardly a place where a stumble or a slip of the foot would not, except for the help of others, send the person who slipped to the foot of the mountain. Every step was on the edge of a precipice, and every step made the precipice higher, — though there is little real choice between falling a hundred feet and falling a mile. The boys appreciated this, and fell not at all. They clung with fingers and toes to every projecting point, and nothing short of an earthquake could have gotten that mountain away from them.

I have called the Matterhorn a creature of the sun and frost. It is now but a wreck, - the core of a far greater mountain whose rocks have been hurled down into the valleys by the "strong gods" of the sun and air, and have thence been scattered over Switzerland and Italy by the glaciers of the Great Ice Age. It stands in the altitude of perpetual frost, but bathed by the warm sunshine of Italy. On every clear day its rock sides become warm in the sun. All ordinary clouds are below its summit, and each cloud that touches it in summer covers its surface with light snow. Then this snow melts again in the sunshine, and causes water to trickle in all the joints and clefts of the rocks. Then at night the mountain grows cold, in clear nights intensely cold, - the water freezes in these fissures, and expanding widens them, thus pushing the outer-most blocks of rock nearer and nearer the edge of the precipice. At last a gust of wind or a careless foot may cause one of these loose rocks to topple over. Down it falls, loosening many more on its way, the whole series plunging with an ever-increasing roar till it reaches the ice of the Furggen glacier. Into the glacier the falling rocks dive, scattering the ice masses, as a stone thrown into a pond causes the water to spatter. Once in the ice the stones move on more leisurely, until after years they reach the point where the glacier melts and gives up its dead, when they pass into the universal rubbish-heap, - the moraine, at the bottom. These are the pierres qui roulent, -"the stones that roll," the dread of the mountaineer. Most high

mountains are fashioned by the glaciers themselves; but the glacier has no hold on the Matterhorn. Glaciers make white domes of mountains; frost makes black pinnacles and spires.

The guides had now tied us together, and the value of the rope in mountaineering soon became very evident to us. In all difficult or dangerous excursions in the high Alps, the persons making the excursion are tied together by ropes. Usually four or five are joined to one rope, the rope being tied around the waist of each. It is the duty of each one to see that the rope below him is kept drawn tight, so that if any person happens to stumble or slip, the aid of the others will keep him on his feet. In very difficult excursions, like the one here described, usually but one person moves at a time, the other three on the rope each holding his position as well as possible until the fourth one has reached a position of safety.

The way we went was in most cases like this. First John the Baptist would scramble up some ledge of rocks, clinging by fingers and toes to projecting points, or reaching some higher crag by means of his ice-ax. When he found a suitable foothold he would shout to me, and I would crawl up to his position, while the next man would edge up to where I was, - and so on. When we came to a specially bad place, a mauvais pas, where the rocks were unusually loose and the hold precarious, I would shout up to him before following him. "Êtes-vous bien placé?" ("Are you well placed?") If John was "well placed" he would shout, "En avance!" ("Come on!") I would then call out, "Tirez!" ("Pull!") He would then draw up on the rope, which action made it much easier for me to scramble up than it would have been without his assistance. Then it became my turn to help up the next man; but he usually crawled up unaided, - having an aversion to being helped, which I did not share, but for which I was duly thankful.

After working along in this way for about three hours, John the Baptist told me to look up and I would see the upper hut and the ropes which came down from it. High above us we could see a little stone shanty under the shelter of a huge pinnacle of rock on the edge of a sharp precipice some fifty feet high. Down this precipice hung a rope, fast to an iron staple above, swinging loosely below. We had read in the guide-books that "ropes have been placed in the more difficult places on the Matterhorn." We had imagined something such as we had seen in other mountains, — a rope railing

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alongside of a steep and narrow path. We were hardly expecting to go up hand over hand on a rope swinging loosely over infinity.

John the Baptist started up on the rope, resting his toes on the projecting points of the rocks, where opportunity offered, until he reached a little shelf, an inch or two wide, where he could stand on one foot. It was growing very cold; the rope was white with frost. I put on my gloves and climbed up for a little distance; but when I came to rest my full weight of two hundred and ten pounds on the rope, my gloves would not cling to it. I felt myself slowly sliding downward. It was not a pleasant sensation. I thought that I should probably stop on reaching the knot on the end of the rope; but I might go too fast, and, jerking John the Baptist from his narrow perch, we would form the nucleus of a small avalanche moving towards Zermatt. But I stopped, and taking off my gloves I tried it again, — this time with better success.

At last, after a long and toilsome scramble we all reached the upper hut, where we lay down on the hay for a little rest and another round of tough bread, sour wine, and chocolate. This hut I shall have occasion to describe farther on.

As we went on, clouds had begun to gather about us, and after a little the wind rose and it began to snow. We lost sight of the earth altogether, and everything below us became a bottomless abyss. Soon we came to the narrow ridge on the shoulder of the Matterhorn where for a short distance the northeast angle of the mountain which we were ascending is no wider than the back of a very lean horse. It is too narrow for one to stand on or even to sit on with comfort. On either side as we crawled along we could look downward seemingly to the very bottom of things. Above this point the first climbers fell from the mountain. I asked John about it, but he would not talk. "I was not here then," he said.

After this we came around to the eastern face again. Here we could see the summit, some five hundred feet above us, — a ragged wall of rock, steeper than any slope we had yet ascended and its top still seeming to hang over our heads. How to get up was evident from the long lines of hanging ropes. We went up these slowly, one after another; and at last we came to prefer these ledges with their ropes to the lower slopes, which, although less steep, offer nothing but rocks and snow to cling to. One of these ropes had had one of its strands cut by the sharp edge of some rock, and the other two

strands were partly untwisted. This rope may break for somebody, but it did not break for us.

It is hard enough to climb this part of the mountain with the aid of the ropes. It seems next to impossible without it; yet some one carried up these ropes and the iron staples by which they are hung, and fastened them all there. The man who did this was John the Baptist. At last the ropes ceased, and crossing over to the north side of the mountain, we found there an easier slope by which we soon reached the summit. It was now a little after noon.

The top of the mountain is a narrow crest, lying nearly east and west, and rising toward a point on the Swiss side. This crest is about twenty feet long and from one to three feet wide. Its north side is a rocky slope, while the south side is nearly perpendicular, and at the time of our visit it was covered with a long overhanging snowbank or "cornice." It was as cold as midwinter. The north wind whistled and howled, so that we dared not rise to our feet, and the snow fell thick and fast. I should hardly say that the snow fell; it is made up there, and every cloud which touches the mountain is a snowstorm. Most of the time we could see nothing; the whole earth was represented by the little summit-ridge, which was all that we could see of the Matterhorn. Once in a while a little eddy in the clouds on the south side of the mountain would give us a glimpse of Le Breuil and the valley of Tournanche two miles below us; and occasionally our nearest mountain neighbor, the Dent Blanche, disclosed her snowcrowned head.

We did not stay long on the summit. It was not very warm, and we wished to give the others a chance. We wrote our names on a card, and placed it in an empty bottle which the mountain keeps as a register for visitors. Victor broke off with his ice-ax the uppermost point of the mountain, a piece of dark green hornblende. I put this in my pocket as a trophy, and we were ready to descend.

In going downward, our motion was much like that of one of the caterpillars or "measuring-worms" which come upon the maple-trees in the spring. The strongest guide in each section was placed last in the series, so as to be "well placed," and to hold the others back in case any one should slip. This guide starts first in each series, and goes down to the niche of the next man below him. When he is again "well placed," the next man advances, and in turn the third and the fourth, — the one standing lowest moving where it is pos-

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sible the length of one section of the connecting rope, after which the others again edge downward to him. The progress is of course very slow, and three fourths of the time each man is engaged in resting, with his heels "well placed" on some projecting shelf of rock.

At times in our descent we felt the force of the tourment, a wind peculiar to the high mountains, — a sort of snow-laden whirlwind, or "wind made visible." This wind goes furiously over the mountain-side, tearing off loose rocks, starting avalanches, and tossing about the banks of snow. Whenever one of these struck us, we lay flat and clung to the rocks, lest we should be literally blown off the mountain. One of our company, I remember, wore a narrow-brimmed hat drawn down tightly over his ears; the tourment took it and whirled it high into the air. The learned professor fell flat on the ground, while every hair of his head caught the rotary motion and stood straight out.

As we went farther, we noticed more and more the treacherous character of the stones on the mountain-side. The whole outer coat of the mountain is loose, scarcely a rock anywhere on the Swiss side being firmly attached. Into all the joints of the strata the water from the melting snow finds its way, and by the freezing of this water the joints are widened and the blocks of hornblende are daily pushed nearer and nearer to the edge. Thus nothing is firm; nothing is stable, and each year the mountain offers a new face to the weather.

Going down the mountain is more difficult than going up. This is not only on account of the mental strain of constantly looking over precipices, but because of the looseness of the rocks. Stepping down on a stone, one is more apt to detach it than when he cautiously clings to it from below. However careful we may be, some stones will fall; and while this may not hurt us, it may hurt some one below us. Then occasionally some stone would detach itself naturally, and go rattling down to the bottom of the mountain, followed by a host of smaller ones, leaving as they pass a strong "smell of sulphur," which, as Whymper says, "tells us who sent them."

The Matterhorn, as I have said, is one of the steepest and slipperiest of mountains, and everywhere it offers but scanty hold to the climber. There is, however, in all this little real danger to men strong of limb and steady of head, accompanied by good guides. hich

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But there is one danger which is real, one which is almost constantly present and against which no skill nor strength can wholly guard, — and that is the danger from falling stones. This risk would be slight with a small party, but our company of eleven, probably the largest ever on the Matterhorn, made so long a line that a stone loosened by the uppermost would acquire a fearful velocity before reaching the last. Not more than five persons should be on the Matterhorn at once.

The head of our column had reached the foot of one of the last ropes which come down from the summit, and was waiting for the others to descend. One of the very last in the company was laboriously crawling over a large projecting rock, when it suddenly became loosened. I remember hearing some one scream "LOOK OUT!" and then suddenly it seemed to me that all sunshine and hope had gone out of the mountain. The great rock fell about thirty feet. Striking a lower shelf, it broke into three or four pieces. One of these, weighing about a hundred pounds, flew over my head and over the heads of John and Victor. The man below us had turned to look back when he heard the noise; the rock struck him in the face, knocked him instantly off the ledge and out of our sight, and then plunged down the side of the mountain.

We were all paralyzed for an instant, — the guides as well as the rest. I remember calling to John to give me rope, so that I could go down to Victor, and let him go down to Gilbert. By the time we got down, Gilbert was struggling to his feet. He had fallen as far as the rope would let him. His face and clothes were covered with blood which flowed from a deep cut like a sabre gash across his nose and forehead. A stiff-brimmed hat which he wore had been cut fairly in two, and its resistance had helped to weaken the force of the blow. We decided that no bone was broken, although the wound was a most serious one. Once at the bottom, we could take care of him perhaps; but should he faint, or be unable or unwilling to walk, we should have a difficult task to carry him down. We tied up the cuts with all the silk handkerchiefs in the party, covered them with snow, and put over them all a thick woolen hood, which John the Baptist carried for use in time of need. In five minutes we were moving again. We were unable wholly to stop the flow of blood, and our course was marked by a red trail. Gilbert's face was soon entirely covered by a red clot; his eyelids swelled so that he

could not see, and after a little he lapsed into a half-unconscious state, in which he seemed to realize only that he had fallen from the mountain, that it was very cold, and that he must always walk. And at times he would give up and lie down in the snow, when we would use every argument in our power to induce him to rise and go on again. It took us four hours to reach the upper cabin, a distance perhaps equal to two "squares" in a city street.

Had our wounded man been otherwise than light of weight, strong of limb, and immensely resolute, we might not have gotten down at all; and a night on the bare side of the mountain meant simply freezing to death. It is hard enough for a well man to go safely down the Matterhorn, far harder than to go up; but for a man blind and faint, it became terrible. "C'est un homme fort et brave" ("He is a man brave and strong"), said John the Baptist. If Gilbert had been as heavy as I, we should have had a task indeed. I remember thinking at the time that it was fortunate that I wasn't hit.

At one time I saw Gilbert slip, and with Victor, who half led, half carried him, fall like a shot. But John the Baptist was always "well placed" and held them. At another time we heard a terrible uproar, and three or four rods away we saw an immense avalanche of stones coming down. This was made of a dozen large rocks of the size of a wagon, with hundreds of little ones yelping in the rear. It was a grand sight; but we were little in the mood for it. "C'est une montagne terrible" ("It is a terrible mountain"), said John the Baptist. The guide Pession had been in a shiver of mortal terror ever since the accident, and for the rest of the day was worse than useless. "You must pardon him," said John the Baptist, "for he has a wife and children in Val Tournanche."

At seven o'clock we reached the upper hut. We put Gilbert on the hay; after which he refused to move, and soon went to sleep. John decided to remain there over night, with Victor, Spangler, and myself, and to send the others down to Zermatt. After many adventures, which I need not here relate, the others reached the bottom in safety. Meanwhile, we five arranged for lodgings in the upper hut, some thirteen thousand feet above the sea, — one of the highest "houses" in Christendom.

This hut is simply a pile of stones, more like the den of some beast than a cabin. It is built between a pinnacle of rock and a precipice, its stone roof rising in a slope from the edge of the latter to the former. The height of the room within is perhaps five feet on the highest or upper side. Its length is some ten feet, and its width about six. On the south end is a little door or hole for entrance, and on the floor on the north end are three coarse blankets and a few armfuls of hay. A little bench, a small table, a tinpail, and a basket of shavings complete the equipment.

John the Baptist sent us to bed at once, - one on each side of Gilbert, to keep him warm. But nobody kept us warm. Our clothes were wet, and my off side was against a frosty rock, which carried away heat faster than I could generate it. The young man in one of Grimm's fairy-tales, who "did not know how to shiver," would certainly have found the coveted experience there. We did little else all night long. Moreover, the floor was very uneven, and the tin wine-flask which did duty as a pillow was far from being "soft as downy pillows are." There was not much encouragement for sleeping. All night long our patient kept on ascending mountains, and recalling his experiences of the day. At about the first watch of the night, he shouted out, "Attention! Attention toujours!" At another time he called us all up with this remark, "Here we will stop walking and take wheelbarrows." When everything else was quiet, the snow thawed on the roof and kept little streams of sooty water trickling over our faces. John and Victor lay on the bare ground; and at intervals, when they could stand it no longer, they would kindle a fire of shavings, and wake us up to take a drink around of chocolate.

I have seen cold nights elsewhere, but nothing to compare with this. The storm ceased early in the night, the clouds blew over, and a sharp, crystalline midwinter coldness penetrated everywhere. We could every few minutes hear the mountain snap, as the water froze in the fissures of its rocks. I sometimes spend the night nowadays waiting for a belated train in the little hotel of some prairie "railroad junction" in Indiana or Illinois, at the time of the January blizzards. The single window in the little bedroom will fit loosely in its place. One pane of glass may be replaced by an old hat, the second by a newspaper, and a third be wanting altogether. The bed may have but one sheet, a hard husk mattress, and an insufficient equipment of comfortless quilts, as heavy and as warm as though made of sheet-lead. With all these conditions and worse as I have sometimes found them, I have now only to lie still and think back

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In the morning we rose early and went out to look at the sunrise. The air was intensely clear. The whole Matterhorn was white with new-fallen snow and glistening with frost. Far below us the clouds hung white and heavy over the valley of Zermatt, their thick folds hiding all of the landscape which was not snow-covered, their upper outlines seemingly continuous with the white surface of the great glaciers. Far beyond the valley of Zermatt rose the giants of the Oberland. Nearer to us were the Dent Blanche, the Weisshorn, the Rothhorn, the three peaks of the Mischabel, and to the right of these the Allalin, the Strahlhorn, the Rympfischhorn, and a host of other "horns," named and unnamed, rose before us. To the east was the long crescent of Monte Rosa, the Cima di Jazzi, the Lyskamm, Zwillinge, and Breithorn, with the great Gorner glacier winding about their feet. It was the sight of a life-time, which can never fade from the memory.

"With drifts of snow, fantastic wreath on wreath;
And peak on peak against the turquoise blue,
The Alps like towering campanili stand,
Wondrous with pinnacles of frozen rain,
Silvery, crystal, like the prism in hue.
Oh, tell me, love, if this be Switzerland, —
Or is it but the frostwork on the pane?" — ALDRICH

Our invalid was better in the morning, but cold, disgusted, and impatient. His swollen eyelids each looked like a ripe plum. He said that he could not open his eyes. I told him to lie still and keep them shut then — a remark which he thought peculiarly unfeeling. We decided to send this Knight of the Sorrowful Figure with John and Victor down to Zermatt, while Spangler and I would wait and play "mumble-the-peg" until their return, which might be next day and might be — never! Not a cheerful prospect; but, as the jester said in the woods of Arden, "Travelers must be contented."

Before they had fairly started, however, we heard shouting from below; and soon the two guides Bic reached us from the lower cabin, in which they had spent the night. We therefore again moved on, but very slowly. The new-fallen snow made the walking very difficult, and much sitting down in slippery places reduced our clothing to a total wreck, concerning which the less said the better. There were many "mauvais pas"; but we passed them all at last, and towards noon we reached the lower cabin. The doctor from Zermatt was there, and also four able-bodied ruffians bearing a sedan-chair. We were now safe at last; and after another drink around of chocolate, — there was nothing else left, — we started for Zermatt.

Our welcome in the village was most enthusiastic. Everybody — English, German, French — was delighted to see us, and the "Matterhorn-besteiger" were the heroes of the hour. In the chapel at Zermatt prayers were offered for the Queen of England and on our account for President Garfield, and thanks were given for our safe return.

As for our own party, an Englishman who was there afterwards said: "I never saw anything like it. Every one of those Americans rushed right out into the street and crowded around, and I actually thought that every one of those ladies was going to kiss the Professor!"

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Ascents of Popocatepetl by the Conquistadores

BY HENRY R. WAGNER

THE earliest recorded ascents of any mountain of consequence in the New World appear to be those of Popocatepetl by Diego de Ordaz, in 1519, and Francisco Montaño, in 1522. Most accounts of these ascents are derived from Bernal Diaz del Castillo's True History of the Conquest of New Spain and from the letters of Cortés, or from histories based on these sources. Until quite recently, however, Diaz del Castillo's work has been available only in a corrupted form. It was not until 1904 that Genaro García published in Mexico an edition taken from an exact copy of the original manuscript. An English translation of this edition appeared in 1908. In presenting the following account of the ascent by Ordaz, I have, however, made my own translation direct from García's text.

ASCENT BY DIEGO DE ORDAZ, 1519

The volcano, which is near Guaxoçingo, threw out, while we were in Tlaxcala, much fire, more than on other occasions it was accustomed to do. As neither our captain, Cortés, nor any of the rest of us had ever seen such a thing we were most surprised and one of our captains, named Diego de Ordaz, took it into his head to go and see what it was and asked permission of the general to make the ascent. He gave him this permission and even ordered him to do so. He took with him two of our soldiers and some principal Indians from Guaxocingo. These frightened him by telling him that if they should reach halfway on the road to the summit of Popocatepetl, which is what they call that volcano, he could not stand the shaking of the earth, nor the flames, nor rock, nor ashes which came out of it. They, themselves, would not dare to ascend higher than where there were small shrines of idols which they called "the gods of Popocatepetl." Nevertheless, Diego de Ordaz, with his two companions, continued on the road while the Indians who were in their company remained below as they did not dare to make the ascent. It seems, as Ordaz and the two soldiers afterward said, that on ascend-

¹ Historia Verdadera de la Conquista de Nueva España.

² Translation by A. P. Maudslay. Publications of The Hakluyt Society, New Series, Nos. 23, 24, 25. Also, in The Broadway Travelers Series, 1928.

ing, the volcano commenced to throw out great sheets of flame, rocks half-burned and light, and a great deal of ashes while the whole range and mountain trembled, where the volcano is located. They stopped without taking a step forward until when about an hour later they perceived that the flashes of fire had passed and it was not throwing out so much ashes and smoke. Then they ascended to the mouth which was very round and wide, perhaps a quarter of a league in width. From there they could see the great city of Mexico, the whole lake and all the towns around it. This volcano is a matter of twelve or thirteen leagues from Mexico. After having enjoyed the fine view, and wondered at having seen Mexico and its cities, Ordaz returned to Tlaxcala with his companions and the Indians of Guaxocingo.⁸

Although the account given by Diaz del Castillo is quite circumstantial and was evidently believed by him, we may be permitted to express some doubt about the Ordaz party having reached the summit of the volcano. Cortés, in his second letter, the one written in Tepeaca, October 30, 1520,4 says that "at the end of August the mountains were so covered with snow that we could distinguish nothing else on their tops but what seemed snow, and from the highest one, a great volume of smoke, as thick as a house, continually comes forth." He then goes on to say that he sent ten of his companions, accompanied by some natives, to climb the mountain. "They went and strove and did all that was possible to scale it but were never able to do so on account of the quantity of snow which lay on the mountain and the clouds of ashes which are blown about on it, and also because they could not endure the great cold which prevailed there. They nearly reached the top, however . . . So they descended and brought with them a considerable quantity of snow and icicles."

Cortés wrote this letter only a year after the event and could hardly have been mistaken about the men not reaching the top. Furthermore, in referring elsewhere to the ascent of Montaño in 1522, Cortés expressly states that nobody had been able to reach the summit of the mountain.

On the other hand, Cortés, in his third letter, speaks of having sent men to the top of a mountain who found some sulphur near the

⁸ Diaz del Castillo (García, 1904), Vol. I, pp. 228-229.

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Letters of Cortés. Translated by F. A. MacNutt. New York, 1908. Vol. I, pp. 233-234.

rim of the crater.⁵ This, I take it, refers to the ascent of Ordaz, although the latter does not mention any sulphur. Moreover, Ordaz, as reported by Diaz del Castillo, appears very positive in his statement that he had reached the crater. Finally, when Ordaz was in Spain in 1525 he secured a grant of arms, on which figured a volcano covered with snow and with flames coming out of the summit. The grant has apparently not survived, but Diaz del Castillo is our authority for the fact that it was given, and there is other contemporary evidence to the same effect. One of Ordaz' descendants had a coat of arms in which the volcano appeared.

ASCENT BY FRANCISCO MONTAÑO, 1522

In his fourth letter Cortés mentions the previous attempt and goes on to say that, as he needed sulphur to make powder, most of the supply having been consumed during the siege, he sent another party. A Spaniard descended by means of a rope seventy or eighty fathoms and obtained a sufficient quantity to last him in his need.6 This feat is recounted at great length in the Cronica of Cervantes by Francisco Montaño, himself, the head of the party who gave the story to Cervantes.7 According to Montaño, after Cortés had sent several parties to make the ascent, who had all returned without reaching the top, he called in him and Francisco Mesa, his artilleryman, and addressed them, telling them of his great need for sulphur and promising them good rewards if they succeeded. Cervantes gives as Cortés' reasons the knowledge he had that Montaño had ascended the Pico de Teida on Tenerife, and had told him there was much sulphur in it. The ascent took place after May 16, 1522, no doubt in the latter part of the month or early in June, before the rainy season set in.

Montaño and Mesa were accompanied by one Peñalosa, a captain of foot soldiers, and Juan Larios. They took six fathoms of cable in two pieces, a hempen sling, and four deerskin sacks. The first night they reached Amecameca. The next day they reached the saddle between Popocatepetl and Ixtaccihuatl, accompanied by a

^{*} Ibid. Vol. II, p. 147.

⁴ Ibid., Vol. II, p. 205.

[†] Cronica de Nuevo España, by Francisco Cervantes de Salazar. Mexico, 1936. Vol. III, pp. 306 et seq. This work was written about 1560. I have made a free translation of the pertinent passages. Cervantes tells the story in the third person with, no doubt, numerous interpolations of his own in Montaño's narrative.

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tion ubt. crowd of (Montaño says) 40,000 natives to look on and see if the Spaniards could accomplish more than the others who had tried it. Reaching there by noon they concluded to begin the ascent at once, carrying besides the cable and sacks, feather blankets to cover themselves at night. Night overtook them after having accomplished one-quarter of the journey, although with great hardship. To protect themselves from the cold they dug a hole in the sand to be big enough to hold them all. After getting down about a foot and a half they encountered rock which was hot and smelled of sulphur. Still, this was better than the cold, so they stood it until midnight when they resumed the ascent, so difficult that at each step death threatened them.

As it was dark and the ice was so heavy, one of the companions slipped and fell into a crevasse more than fifty feet deep. He came to rest in a narrow place between some great ice cones hard as steel, which if broken rolled down more than 12,000 feet. (Sic.) He shouted to his companions for help. With great risk of falling they let down a cable with a running slip knot, which with great difficulty he put under his arms. With still greater difficulty, aided by his arms and feet and starting to pull, they were able to draw him up full of wounds.

In this condition, almost lost, not knowing what to do, because they were so tired they could hardly move, they determined not to go on, but trusting in God, to await the dawn. If the sun had delayed some hours more in rising, not one of them would have been alive, as they were already frozen. Meantime, turning their faces towards each other, they warmed their hands with the vapors of their breaths, thus warming each others hands; their feet and legs not feeling the cold.

When the sun rose they recommenced the ascent, encouraging each other as best they could. Half an hour or more later a cloud of smoke rose from the volcano, enveloped with great flames. A red-hot stone, the size of a quart bottle, was thrown out, which came rolling down to stop where they were, apparently sent by God for that purpose. It weighed but little, as they stopped it with a blanket. If it had been weighty, with the speed with which it came, it would have carried along whoever tried to stop it. With this they warmed themselves so that they recovered their senses, and with new energy (as Spaniards usually do with a little help) continued the ascent, animat-

ing and helping each other. They were not, however, able to continue very long at this work, as one of them in a half hour fainted; probably the one who had fallen before.

The rest left him there, telling him to be of good heart and that they would return for him. Commending himself to God, as there seemed to be no other remedy, he told them to do their duty as it mattered little if such an important business should cost anyone his life.

They kept on ascending, although with sorrow over leaving their companion and about ten o'clock in the morning reached the summit of the volcano. From the top they could see the bottom of the crater burning like an ordinary fire, something dreadful to see.

It must have been 900 feet from the rim to the place where the fire was. They went around the edge to see where they could best enter it, and on all sides found the entrance so frightfully dangerous that each man was sorry he had come up, because they were obligated to die as they had promised or not to return to Cortés. As with men of honor, doing something dangerous avails more than danger, no matter how great it may be, they determined, so as not to "pass the buck" to each other, to cast lots to determine who should be the first to enter. This fell to Montaño.

Hanging by a cable, seated in a sling and carrying a sack, Montaño entered eighty-five feet, and the first time brought out the sack nearly filled with sulphur. In this way he entered seven times until he had brought out over 200 pounds of sulphur. Then another companion entered, and in six trips brought out 100 pounds or more, or in all 300 pounds. This they thought sufficient to make a good amount of powder and therefore decided not to enter again, because, as Montaño said, it was frightful to look down; for besides the great depth which made one dizzy, the fire and smoke, together with the red-hot stones which the inferno from time to time threw up, frightened him. Moreover, this fear was increased by the thought that those above might be careless, or the cable might break, or the sling fail, or some other unfortunate happening, which always carries with it the greatest fear.

They were all very content, for free from this fear, they made ready to descend. At once, another great anxiety arose accompanied by great fear, namely, finding the way down. This was dangerous, even if they had not carried loads. They consulted together, and Montaño determined to make a turn around the volcano while his companions were preparing the sacks. Proceeding with great care, he shortly returned to his companions. Having found neither trail nor a safe descent, he told them that to descend with less danger it was best to do so by going around the volcano, although doing this would take much more time. This seemed advisable to all, so they descended carefully, each one carrying what he could without leaving anything behind. At almost every step there were precipices which they had to pass with their backs to them and carrying their loads on their chests, sliding until they found a place where they could stop with their feet. They proceeded in this manner over a great distance, many times death staring them in the face on account of the dangerous passages which they encountered from time to time, stopping and investigating where they could best descend and sometimes being obliged to turn back or go to one side or the other, as otherwise death would have been certain.

As these daring men were proceeding in this manner they came to where they had left their discouraged companion. Although already he was mistrustful of living and was solely occupied with asking God to pardon his sins, on hearing the noise and talk of his companions, but not believing it was really they but that he was dreaming, he said first that they should speak. "Are those who come my companions?" These answering, "We are," he replied "Blessed be God, today I have been born." All stopped awhile, certainly with great joy, thanking God that thus He had guided them. They then continued their descent, each aiding him at times, a very necessary business as he had no more strength than to be joyful at being among his companions. So great was the fright he had that night from things he saw or imagined (so great is the imagination) that in many days thereafter (as Montaño told me) he did not recover his senses.

Thus, at four in the afternoon, they reached the foot of the volcano, watched by the multitude of Indians who were awaiting them. The chiefs and the rest of the people ran to them with great joy and gave them at once something to eat, as since the preceding afternoon they had not eaten a mouthful. On finishing eating, they put each man on a stretcher and gave the sacks of sulphur to Indians to carry. They bore them on their shoulders as they did great men, accompanied on both sides by numerous Indians, frequently stumbling and

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made anied rous, and falling over each other to look at their faces, astonished that there were men of their figure and features, who could have done something so astounding, never before seen or heard of. So it is now, as no one has since reached more than half-way up the volcano. That night they reached Coyoacan to receive a great reception from Cortés and the army.

Montaño, the hero of this adventure, was a native of Ciudad Rodrigo, and had come to Mexico with Narváez. He took an active part in the conquest of the city and later was one of the first men sent by Cortés to Michoacan. In 1540, when a resident of Mexico City, he received a grant of arms, in which this feat just described is recounted very briefly. The arms mentioned as given him, however, do not contain any volcano. Perhaps the one in the arms of Ordaz was considered enough of that sort of thing. Cervantes states that Montaño had told him frequently that he would not go up that volcano again to take out sulphur for all the treasures in the world. This was certainly after 1560, and consequently Montaño was still alive. He wrote some so-called Memoriales, of which Cervantes made considerable use. Francisco Mesa, the artilleryman, apparently a native of Marchena, had been Cortés, chief of artillery from the start. Very little is known about him beyond his participation in the capture of Narváez and the subsequent capture of the city. He accompanied Montaño to Michoacan after he returned from the ascent, and Diaz states that he was afterward drowned in a river.

Peñalosa was a captain of crossbowmen who had come with Cortés. I have not been able to ascertain his Christian name. He and his dog also accompanied Montaño to Michoacan, and Cervantes tells a very interesting story about the dog, which it seems the Michoacan chief, Cazonzi, wanted so badly that Peñalosa finally had to give it to him only to have it sacrificed.

Larios also accompanied Montaño and Mesa to Michoacan, and the only further reference to him that I have seen is that he brought two letters from Ayutla about the uprising of Yopes Indians in March, 1531. He had probably come with Narváez, and Diaz says he died a natural death as a young man, after having had litigation about his Indians.

Cervantes, writing about 1560, adds to the account of the ascent that since then no one else had tried it. This may be true, but Diaz del Castillo, who was writing much about the same time, in speaking there

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scent Diaz king of the ascent of Ordaz, says that many Spaniards had ascended the mountain since, even Franciscan friars.⁸ He adds an interesting remark to the effect that since Ordaz' ascent they had not seen so much fire nor heard so much noise, and that there had even been certain years when the volcano did not throw out any flames, until 1539, when it erupted with great flames, rocks and ashes.

^{*}In his Historia General de las Cosas de Nueva España, Edition published in Mexico, 1938, (Vol. 3, p. 297), Sahagun says that he had been to the top of the mountain. Very likely he was one of the Franciscans to whom Diaz del Castillo referred.

Roping Down

By RICHARD M. LEONARD

POSSIBLY the greatest sport in rock-climbing is the thrill of roping down in long bounds through space, of dropping almost freely with something of the acceleration of gravity, then stopping smoothly under full control. To be able to accomplish this with maximum fun and safety requires considerable research and study. Of the ten variations of roping down which have been described to date, the experience of the Sierra Club and general modern usage seems to have favored that devised by Dulfer of the German Alpine Club, described carefully by R. L. M. Underhill in his relatively early articles in Appalachia and the Sierra Club Bulletin. We now offer certain developments, worked out by the Rock-Climbing Section of the San Francisco Bay Chapter of the Sierra Club, which have apparently not been published heretofore.

The tendency toward longer rope-downs, for pleasure and efficiency, increases the hazard unless proper precautions are taken. A climber may be struck by a small rock loosened by his own rope or otherwise, he may lose control through vertigo, cramping of the hands, by fatigue, or through inexperience. In any of these cases, lack of adequate protection may very easily be fatal. Where a reserve rope is used and the rope-down is less than the length of the climbing rope, it is easy to safeguard all except the last man by means of an upper belay. Where the rope-down is not more than half the length of the climbing rope, even the last man may be protected by an upper belay through the rope-down sling. Frequently, however, the rope-down is longer than the climbing rope and a technique is needed that will protect the last man, yet allow freedom in roping down. Such protection was devised in Berkeley practice climbs several years ago.

The use of the rope is identical with that advocated by Underhill; the doubled rope comes from above, between the legs, around either thigh to the front, across the chest, over the opposite shoulder, and across the back to the control of the hand on the same side of the body as the thigh which is supported by the rope. With this technique it is clear that the body is kept upright by the mere sliding of the free hand along the taut rope from above. That hand plays no

part in the control of the speed and manner of roping down. All control is maintained by varying the tension on the rope after it has passed around the body thus changing the effective friction of the rope upon the body, controlling the rope-down accurately and smoothly. But, if anything occurs to force the climber involuntarily to relax control of either hand, he falls, unprotected and unchecked.

To avoid such a situation, the first requirement is to keep the body of the climber upright so that he will not fall backwards out of the rope. This is accomplished simply by using a carabiner to attach a loop of sling rope under the climber's armpits to the rope from above, the carabiner sliding freely at any speed. To be sure that the loop does not defeat its purpose by dropping too low on the chest and thus prevent its being effective in holding one upright, it should pass both over and under the shoulders. This is easily arranged by slipping both arms into a five-foot loop of sling rope much as one would put on a coat. Both "sleeves" are then snapped into the carabiner. For extra safety the reserve rope crossing the chest should also be snapped in.

The second requirement is control of tension on the lower rope, to vary the effective friction and the speed of descent. The first man down can easily control that tension from below. The second man can then rope down as freely and rapidly as ever, but if he should lose control, he cannot fall out, because of the carabiner running on the upper rope, and his control of friction can immediately and effectively be taken over by the man below. Experiments have been made on cliffs of all angles and climbers in all positions. Even when a climber relaxes completely as though unconscious, releasing both hands and turning completely upside down or collapsing, the rope, although dropping off his shoulder, continues to slide through the carabiner on his chest. In any position, a tension of only ten to fifteen pounds applied to the rope by the man below, will hold the unconscious person in mid-air or allow him to continue to slide down either slowly or rapidly under complete control.

This technique has other advantages, as was pointed out by Underhill in an advance critique. Heretofore the most experienced climber has remained behind to protect the others. It is, however, often difficult for him to assist those who need the benefit of his experience. A sound belay position may be far back on a ledge out of sight of the person roping down; it is frequently impossible to

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hear signals or give instructions. In using a carabiner-protected rope-down the best man should be the first down since the first is unprotected after the end of the climbing rope is reached. Being the first man down is a real advantage to the leader on a new or difficult descent. He personally can pick out the best stopping place and make plans for the next stage while the others are coming down under his protection. He also can maintain much better contact with the person roping down, frequently being able to supervise the entire rope-down from a control position out of range of falling rocks. The carabiner protection also eliminates the necessity of using two ropes. While this saves the weight of a reserve rope, a more important advantage is that one no longer has the serious complications of spinning beneath an overhang. Several cases have been reported where the belay rope and reserve rope have become so twisted that the climber has had very serious difficulty in continuing the rope-down. The carabiner technique obviates this difficulty. It is easily applied, allows freedom of action, and should be urged as standard practice on all long rope-downs.

In local practice climbing and on the high angles of Yosemite Valley we climb with a 120-foot length of half-inch diameter Manila hemp shipping cordage, tested to a minimum of 2650 pounds. We also carry a 200-foot length of five-sixteenths-inch rope of the same quality, tested to 1000 pounds single. On such climbs, weight is not important, but in the high mountains where all equipment has to be carried long distances we feel that the 1750 pound strength of seven-sixteenths climbing rope is sufficient. Quarter-inch rope has been experimented with in an effort to avoid the six and one-half pound weight of the normal reserve rope. The smaller rope has a minimum strength of 600 pounds per line or approximately 900 pounds when doubled through a rope sling. This is certainly adequate if the rope is used only when relatively new, and is used with five-sixteenths or three-eighths-inch slings on sharp edges or anchors. Due to the danger of cutting, our group generally disapproves quarter-inch rope and it cannot be recommended except where weight is very important and expert handling is assured.

The natural tendency on finding joy and sport in roping down is to increase the length and frequency. In 1934 after the first ascent of the Higher Cathedral Spire, three of us roped down 500 feet at an average angle of seventy-seven degrees in less than forty minutes. tected

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This was accomplished in relays. The first climber roped down sixty feet or less on the half-inch 120-foot climbing rope. He had the 200-foot five-sixteenths-inch reserve rope with him which he placed in position and roped down on while the other two were roping down the summit pitch. When they were off the climbing rope they dropped it to the base of the next rope-down where the first climber again placed it in position and roped down. This last year three of us roped down a sixty-five degree face of Yosemite granite, dropping nearly 800 feet in only five rope-downs. We were using the same type of equipment, but instead of relaying we joined the two ropes to form one double rope of 160 feet in length. The difference in diameter of the ropes was immaterial, and the knot joining the ropes was easily passed. The fifteen-pound weight of such a length of rope was not difficult to handle. Due to the extreme length of the ropes, it is particularly important to keep a finger between the two lines, so as to minimize twisting with consequent difficulty in retrieving the rope. Although frequently in the Yosemite Valley we have used this technique of joining ropes, it cannot generally be recommended. The rope must be laid out with considerable care so that the relatively large knot at the junction of the ropes (120 feet above the base of the rope-down) will not jam or loosen debris on the way down. Since Yosemite granite is so massive we do not have much difficulty, and, in fact, often need the extra length in order to reach the infrequent ledges or belay points.

We have experimented with overhanging rope-downs equivalent to a clear drop of 300 feet. This was accomplished on a thirty-foot overhang by attaching to the lower end of the rope a weight equivalent to that of 300 feet of double five-sixteenths rope. We find that roping down under these conditions is entirely possible, but is a form of torture comparable to that described by early writers on roping down, who had no conception of modern technique. It is difficult to find any portion of the anatomy that will stand the heavy friction at the beginning of the rope-down and still permit sufficient friction to check the force of gravity when there is no longer any weight on the free rope at the base of the pitch. We have therefore worked out a variation using a large size carabiner to supply friction ordinarily arising between rope and thigh, thus allowing the climber to descend even the theoretical 300-foot overhang in comfort. One must proceed in a smooth and dignified

manner, however, or the turns of rope around the carabiner may jam temporarily. More serious objections are the severe bending of the rope around the carabiner and the great heat generated, which are very hard on the life and strength of the reserve rope.¹

A better method of reducing discomfort, and wear on clothing, is the use of the leather patch on the pants and occasionally on the shoulders. By this means the usual pain is eliminated from the process of converting potential energy into heat, concentrated on a small portion of the climber's anatomy. With the addition of a layer or two of thin felt beneath the protecting leather, the climber may make long drops through space, bounding out from the cliff, and finally checking speed smoothly and gently. These provide an exhilaration that constitutes one of the main joys of our rock-climbing.

Many of the bits of information referred to in this article may have been used by other climbing groups for many years; however, it is principally through publication or even republication that we are able to advance climbing knowledge and learn of new developments in other localities. Further bibliographical references will be greatly appreciated.

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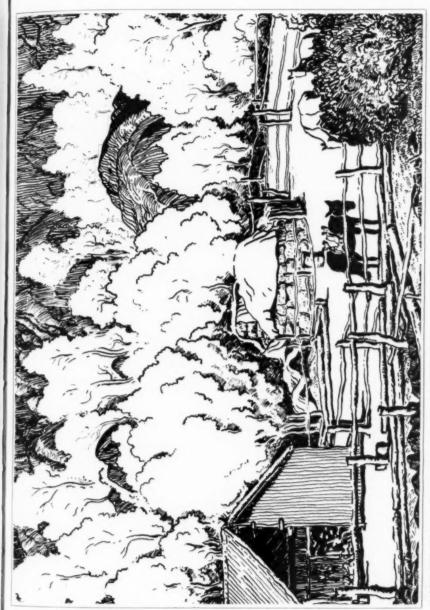
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An Appreciation of Albert Marshall

By CEDRIC WRIGHT

Albert Marshall, whose work in pen and ink drawing is shown in this number of the Sierra Club Bulletin, is a graduate of Johns Hopkins School of Art, a pupil of Hans Hofmann. But he is mostly a pupil of the Sierra. Too much cannot be said of his love of our mountains and of his moodful reproductions in oil, water color, and pen. Like Muir, his life has been consecrated to the perpetuation, by living and thinking, of the qualities derived from intimate association with cloud and forest, rock and meadow. For me these genuine qualities have been, over a long period of friendship, a most refreshing example. I am therefore especially glad to introduce him here in order that he and his work may become more closely associated with the high purpose of the Sierra Club.



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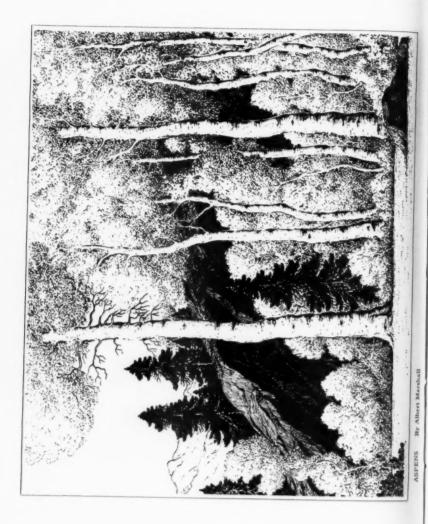
HALLIDAY'S CORRAL - BISHOP CREEK By Albert Marshall

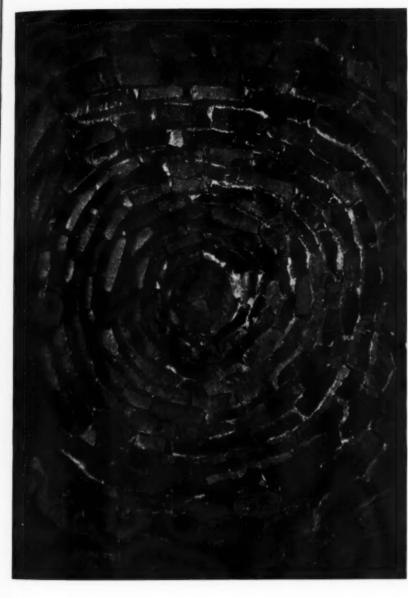


MOUNT HUMPHREYS By Albert Marshall

MOUNT HUMPHREYS By Albert Marshall

NEAR TAHOE VALLEY By Albert Marshall





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CLOUDS OVER TAHOE By Ansel Adams





DAVID STARR JORDAN'S MATTERHORN GUIDES Photographs by courtesy of Stanford University Library



DAVID STARR JORDAN

About the time of his ascent of the Matterhorn

Photograph by courtesy of Mrs. Jordan

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HIGHER CATHEDRAL SPIRE By Francis P. Farquhar



ROPING DOWN LOWER CATHEDRAL SPIRE By Richard M. Leonard



The Carabiner Sling Normal position

Rope detail Held from below

THE CARABINER-PROTECTED ROPE-DOWN Photos by Doris F. Leonard, David R. Brower



ROUTE ON MONUMENT PEAK (Climbers encircled) By Allen Estes

Brower



"THE MACHETE" Near Pinnacles National Monument By Robin A. Hansen



CALLIOPE HUMMER NEAR DEER MEADOW By Henry E. Timby



ROBERT MARTIN PRICE

Robert Martin Price · 1867-1940

By WILLIAM E. COLBY

THE Sierra Club has not only lost an outstanding and greatly beloved member in the death of Robert Martin Price, in Reno, Nevada, on January 19, 1940, but his passing has also severed one of the few remaining ties which bind the present membership to the Club's beginnings. Robert Price was a charter member of the Club, its Secretary, 1897-1900; a director, 1915-1938; its President, 1924-1925; and an Honorary Vice-President, 1938-1940.

The large and important part that Robert Price played in the early years of the Club is partly evidenced by the articles he contributed to the Sierra Club Bulletin. The second article in the first number of the Bulletin for January, 1893 (Vol. I, No. 1, pp. 9-16) is an account of a pioneer knapsack trip down the Grand Canyon of the Tuolumne. This was followed in the May, 1895 number (Vol. I, No. 6, pp. 199-208) by an account of another trip "Through Tuolumne Cañon," intended as a guide to those making the descent. In the January, 1912 number (Vol. VIII, No. 3, pp. 151-157) he recounts his trip "With the Sierra Club in 1911." In the 1922 issue (Vol. XI, No. 3, pp. 284-289) he describes an "Exploration of Mount Darwin." The fact that his wife shared with him his great love of the Sierra is shown in her article in the January, 1898 issue (Vol. II, No. 3, pp. 174-184) in which she describes "A Woman's Trip through the Tuolumne Cañon" which she made with him on another occasion.

He was born in Barton, Wisconsin, January 22, 1867; at the age of ten he moved to Nebraska, and to Riverside, California, in 1881. He graduated from the University of California in 1893 and from Hastings College of the Law in 1896. He practiced law in San Francisco until 1900 when he left for Alaska, practicing in Nome and Teller City until 1903. In 1904 he opened an office in Reno, Nevada, where he remained until his death.

In 1896 he married Jennie Ellsworth who survives him, as also does their daughter, Mrs. Harriet Fairchild. He and his wife were most congenial, especially in their love of the High Sierra. Throughout his busy career he kept alive his university associations. He was a close friend of John Muir, and his heart was in the High Sierra

which he visited frequently, many times with the Sierra Club on its annual outings. Throughout his life he was active in civic and benevolent work.

Robert Price was a lovable character, so genuine and straightforward in all his human contacts that he compelled admiration wherever he went. With it all, he had such a kindly feeling for everyone that this trait was reflected in the high regard in which he was held by all his friends.

The Sierra Club has lost one of its active founders and most stalwart supporters.

SIERRA CLUB

Founded 1802

MILLS TOWER, SAN FRANCISCO, CALIFORNIA

THE PURPOSES OF THE CLUB ARE: To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada.

JOHN MUIR, President 1892 to 1914

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Notes and Correspondence

MILL CREEK REDWOODS SAVED

PRESERVATION OF "AVENUE OF THE GIANTS" BEGUN

BY NEWTON B. DRURY

One of the great forests of the world—the Mill Creek Redwoods near Crescent City, Del Norte County—was in large measure assured of preservation for all time, when the California State Park Commission, on December 5, 1939, took title to 6800 acres from The Del Norte Company, Ltd. The purchase price was \$80,000.00, met by private gifts obtained through the Save-the-Redwoods League from individuals in many parts of the United States.

A beginning was also made in 1939 toward accomplishing another objective of the Save-the-Redwoods League — the preservation of "The Avenue of the Giants," a stretch of superlative forest extending along the Redwood Highway north of the present Humbolt Redwoods State Park. The League is concentrating at the present time upon the three miles between Dyerville and Englewood, Humboldt County, and funds are available to purchase the first unit of 400 acres at a price of \$217,000.00. It is anticipated that title will be taken early in 1940. Options are held upon remaining units, the total area being approximately 1500 acres.

The California State Legislature in 1939 appropriated \$150,000.00 toward "The Avenue of the Giants," with the understanding that this was the first of a series of appropriations over a period of years. The League, through contributions toward this project, and toward the Mill Creek Redwoods, is matching State funds in the amount of \$148,500.00.

Thus these additions to the California State Park System represent a total of 7200 acres, valued at \$297,000.00.

A NEW STATE PARK

Establishment of the Mill Creek Redwoods State Park realizes an objective established by the Save-the-Redwoods League over twenty years ago. The Olmsted State Park Survey of 1927 recommended this area for inclusion in the State Park system, and this recommendation was approved by the State Park Commission, of which, for nine years, William E. Colby was chairman. Both the National Park Service and the U. S. Forest Service have recognized the importance of saving these redwoods.

The coöperative attitude of the owners and their desire to see this outstanding tract of redwoods protected intact was responsible for the very favorable price for the first unit, coupled with exceptional circumstances relating to the burden of delinquent taxes on the property. The Frank D. Stout Memorial Grove of forty-four acres at the junction of Mill Creek and Smith River was given to the State in 1929 by the family of the former president of The Del Norte Company, Ltd., from whom the purchase was made. Together with adjoining state holdings in Hiouchi Park, the Mill Creek Redwoods State Park now comprises almost 7000 acres. An additional 2500 acres to round out the area are subject to option agreement under which, if state funds and private gifts to match them become available, it is planned to make purchases in installments over the next ten years.

The combined purchase and option represents a total price of approximately \$550,000.00 for 9300 acres. The lower average cost per acre in the first unit was partly due to the necessity for meeting, at this time, delinquent taxes on the holdings of the lumber company with funds realized through the sale. A price of \$80,000.00 for 6772 acres could thus not be taken as representative of the true value of this magnificent stand of redwood timber, which only two years ago was assessed by Del Norte County at close to a million dollars.

The Mill Creek Redwoods are located on the Redwood Highway five miles northeast of Crescent City. They lie along the scenic Smith River and are the first redwoods seen by travelers entering California on the main route from the north. The old county road, formerly the highway to Grants Pass, Oregon, also traverses some of the finest portions of this tract. It is here that District Superintendent E. P. French stated that he found the heaviest stand he had ever cruised in his long experience as a timber estimator.

SUCCESS IN SAVING THE REDWOODS

Thirty-five years ago, a writer in "Out West Magazine" declared: "Other countries may have higher mountains, more picturesque lakes, greater cities, and more wonderful art treasures, but no other country has anything that can approach the beauty and grandeur of the redwood forest of northwestern California . . . This forest is doomed . . . as fast as fire and water, steam and electricity, dynamite and huge bandsaws can destroy its columned grandeur."

Fortunately, the answer is found in the record of the Save-the-Redwoods League, which has succeeded in preserving a great part of the four finest areas: Bull Creek, Prairie Creek, Del Norte Coast, and Mill Creek. The total comes to 40,000 acres, valued at \$6,200,000.00, extending for thirty-five miles along the Redwood Highway. A definite program to complete these park reserves is well in hand, with encouraging prospect of success.

THE REDWOOD MOUNTAIN BIG TREES

BY PHIL S. BERNAYS

On August 9, 1939, the Redwood Mountain tract of 2680 acres, in northeastern Tulare County, was purchased by the United States Government. Thus what had been the largest and finest privately owned stand of Sequoia gigantea in the world was assured protection, climaxing a movement started in the days of John Muir.

In 1925 I was told by two of the five who then owned Redwood Mountain that continued payment of the heavy taxes on their mountain acreage had become almost unbearable. A sale, either to federal or state for park purposes,

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seemed imperative. Some time later an offer came from lumbering interests wishing to cut the pine bordering the sequoias. I urged them to turn down the offer until they had exhausted every other avenue. Months passed, taxes again became pressing, and they found it necessary to accept the terms of an old backwoodsman, who offered enough to satisfy taxes if allowed to cut the fallen sequoias into fence posts and grape-stakes. No living trees were cut. It was this cutting of the prone trees, however, which focused the attention of the Secretary of the Interior on the need of obtaining title to Redwood Mountain.

All five owners agreed to a price \$100,000 under the appraisal, based on a timber cruise and considering to some extent the esthetic value. The sequoia groves alone had been quoted at \$1,000,000 in the twenties. Months of negotiation between the owners and national park officials finally resulted in an agreement. Credit for the successful conclusion of the purchase should be given to the tireless efforts of Regional Park Service Director Frank A. Kittredge, and to Secretary of Interior Harold L. Ickes.

Last year I revisited Redwood Mountain after a twenty-nine year absence. Strolling downstream toward the Hart and Theodore Roosevelt trees, I passed countless young sequoias of from five to fifty years of age. Sprinkled among these young giants were dozens of firs, cedars, and pines—a forest of supreme wild beauty. Beside our path lay an uprooted monarch whose three or four broken lengths stretched over some 800 feet of territory. The diameter near its base approximates that of the General Sherman Tree. On a single acre we counted seven giants averaging ten feet in diameter and 200 feet in height. There were at least 7000 sequoias averaging two feet in diameter. The grove is unique in that it stands on top of a ridge, to be seen in silhouette against the sky. Dedication of the Redwood Mountain Big Trees is planned for early spring, 1940, and should attract many Sierra Club members.

TRAILS IN THE CALIFORNIA NATIONAL PARKS

Report submitted to Hon. Harold L. Ickes, Secretary of the Interior, on May 19th, 1939, at his request.

I. TRAILS IN THE HIGH SIERRA WILDERNESS AREAS

The following suggestions are made as to policies which should apply in the wilderness areas of both National Parks and National Forests:

Trail systems should be built and maintained to make the various regions accessible, following natural routes of travel, but the wilderness should be kept free of lateral or branch trails.

Trails should follow the natural contour of the country and make as few scars as possible, not being built on surveyed grades or on too high a standard.

While the greatest freedom of movement for parties using pack-stock is desired, we see the necessity of enforcing rules to protect the areas from the damage resulting from concentrated grazing of pack-stock along the trails and about the natural camping sites, which are often areas of the greatest attraction and hence the most popular. With increasing use of pack-stock this damage is becoming more of a problem.

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Consideration should be given to the location of High Sierra camps, and depots where food may be obtained in order to make it possible for knap-sackers to travel through and enjoy the high wilderness areas without use of pack-stock. These camps and depots can be supplied by pack-trains, if properly handled by professional packers, without injury to the regions traversed. Properly located camps and depots would not only help to preserve the wilderness from the damage done by pack-stock above referred to, but would make the high regions accessible to those who can not afford pack-stock, especially the youth of the country.

Attention should be given to the signing and maintenance of good fords. The necessity for bridges should be judged by maximum water flow. Footlogs should be provided over streams where no bridges for animals are necessary. This requires both construction and repair of animal- and foot-bridges.

Passes should be cleared of snow early in the season. Often a small amount of work will free passes and open up the trails early, thus better distributing the travel over a longer period. For the same reason trails should be inspected as early as possible and necessary repair work accomplished.

II. MEMORANDUM ON TRAIL PROJECTS IN SEQUOIA NATIONAL PARK

With very few additions, the trail system in Sequoia National Park is considered adequate to render the area accessible. Some secondary trails are in need of repair to make them passable for pack-stock.

The following suggestions for future development are made:

(1) In order to provide the many visitors to Giant Forest an opportunity to enjoy a short trip into the higher areas, a trail should be constructed via Table Meadow and Moose Lake from the end of the present trail at Pear Lake to Alta Meadow. If High Sierra Camps are established at Emerald Lake and Alta Meadow, both suitable sites for camps, there will be a circuit from Lodgepole Camp via Heather Lake, Emerald Lake, Pear Lake, Table Meadow, Moose Lake, and Alta Meadow (from where the climb of Alta Peak may be made), returning to Lodgepole (or Giant Forest) on the Alta Trail. Such a circuit, with the two camps mentioned, will make available to hikers a beautiful and inspiring trip of a few or many days as their choice may be. The circuit from camp to camp would be three one-day walks.

A connecting trail also could be nade from the Table Meadow area to meet the Elizabeth Pass Trail south of the pass. Such a trail would make possible a longer circuit and would also be very useful as a high route from Giant Forest connecting with the trail leading to Mount Whitney via Copper Pass, Colby Pass and Kern-Kaweah—one of the most scenic routes in the Sierra.

(2) A trail now exists from Mineral King to Columbine Lake. Some time ago a route was located for a connecting trail from Columbine Lake to Little Five Lakes via Big Five Lakes. This trail would have great scenic

beauty and would give Mineral King a better approach to the High Sierra Trail at Big Arroyo.

(3) The trail up the Kern-Kaweah from Junction Meadow to Colby Pass is marked for a main trail to be reconstructed. We suggest improving the trail down to Cloud Canyon on the north side of Colby Pass, and up Cloud Canyon over Copper Pass and along the divide to meet the Elizabeth Pass Trail. This route over Copper Pass is probably one of the most spectacular and beautiful trails in the mountains and would afford a circuit with the High Sierra Trail. Such a trail would also remove the pressure for a trail connecting the High Sierra Trail and the Kern-Kaweah Trail by way of Nine Lakes Basin and over the Kaweah Peaks ridge. This trail has been proposed, but as it invades wilderness areas now trailless, the route should be abandoned. Improvement of the Copper Pass and Colby Pass trails also has the merit of affording a circuit of Cloud and Deadman canyons from the north, while a good trail on both sides of Colby Pass is needed as a crossing of the Kings-Kern Divide from the north into the upper Kern.

Consideration should also be given to the location of food depots along the route of the High Sierra Trail, so that hikers could travel from Giant Forest to Mount Whitney or vice versa with a light knapsack.

WINTER SKI HUTS AND TRAILS

The region traversed by the proposed circuit trail from Lodgepole Camp seems to offer the best possibilities for development of ski trails and huts in Sequoia Park, as it is accessible from the road and is good ski terrain, especially the Table Meadows area. The proposed camps or lodges for summer use could be made available for use as ski huts for winter use.

III. MEMORANDUM OF TRAIL PROJECTS IN YOSEMITE NATIONAL PARK

Most all the existing trails on the floor of Yosemite Valley are purely utilitarian for going about to the store, museum, post-office, etc. The Valley is greatly in need of trails from which the beauties of the Valley itself can be enjoyed away from motor cars and traffic. A few are here suggested. Also a new route to the north rim of the valley is very badly needed.

YOSEMITE VALLEY - FLOOR AND RIM

(1) Happy Isles to the Four-Mile Trail. This trail would start at Happy Isles, proceed westward on the talus slope passing about a hundred feet above the Curry cottages and thence down the Valley on the talus slope above Camp 19, finally joining the existing trail near the Old Village. This trail would serve several purposes. It would enable riders and pedestrians to get from the upper valley into the lower valley without the necessity of following along the highway from Clark's bridge to the Old Village, as is now the case. At Happy Isles the proposed trail would pass through a beautiful forest near the old spring, giving one the feeling of being entirely remote from

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motor cars, people, and highways. In passing through Camp Curry, the trail would be high enough on the talus slope to give only occasional glimpses down into the camp, as contrasted with the present footpath and bridlepath which crosses the Camp Curry road at the busiest intersection in the Valley and continues alongside this road the entire distance to the Old Village. The existing trail serves merely as a means to get between the upper and lower valley but has hardly any scenic or wild character. The proposed new trail, as it passes along the talus slope behind LeConte Lodge and continues behind Camp 19, commands superb views of Yosemite Falls and the meadows of Yosemite Valley, and the talus slopes serve to conceal most of the evidence of roads and structures.

(2) Foot Trail to "Devils Bathtub." At the point where the Royal Arch Cascade strikes the talus slope back of the Ahwahnee Hotel, there is one of the finest views of the upper valley that can be obtained. This point is only slightly above the height of the yellow pine forest on the Valley floor. There is an extremely rough, dangerous trail leading to this point now. At this point also is a lovely pool of water formed by the Cascade. During high water the climb is worthwhile for the show of cascades and water alone.

(3) From Yosemite Valley to the Rim. Indian Canyon Trail. At present there is no suitable trail on the north side of Yosemite Valley leading to the rim. It is claimed that the present route of the Tenaya Lake Trail above Mirror Lake up the zigzags cannot be relocated to afford any greater safety than we have at present. In winter the zigzags from the Valley floor to the Snow Creek summit are so dangerous most of the time that it is a real question whether the trail should be used at all. Even in summertime this trail is subject to earth- and rock-slides. It is of primary importance that there be a good trail out of Yosemite Valley to the north rim because of the trail's relation to the High Sierra Camp route. There seems to be convincing proof that there is not a location to be had between Mirror Lake and the base of the zigzags where a new trail could be put without excessive cost or injury to landscape values.

If it should develop that a feasible route to the north rim cannot be found via Tenaya Canyon itself, then a searching study of the possibilities of Indian Canyon should be made. I understand that a location was made for this trail some years ago, but fear was expressed that it might make a scar visible from other points. Subsequently, following the abandonment of the project, Gabriel Sovulewski, after further study, claimed that he could modify his first plan in such a way as to take a trail up this canyon without doing any harm to the country through which it would pass. Ansel Adams, who is familiar with this route, concurs in that opinion, and claims that this canyon is the natural route to the north rim used by the Indians. If the Indian Canyon trail were built a branch would lead to Snow Creek and on around the High Sierra Camp circuit, while the westerly branch would lead to Yosemite Falls, Eagle Peak, Ten Lakes, etc.

It is claimed by park authorities that the present trail from the floor of the Valley to Yosemite Point is dangerous, particularly for horseback riders. The nature of the terrain is such that it is subject to rockslides where it contours along a ledge beyond Columbia Rock. A connecting trail could be built following a natural ledge from the Indian Canyon Trail to Yosemite Creek, from where it would climb up to the present Yosemite Point Trail beyond the dangerous slide area. This route would be spectacular in its views.

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(4) Union Point to Moran Point. The old trail has been destroyed by slides. Moran Point has a wonderful view.

(5) Rim Trail Along Illilouette Ridge. The route follows an easy grade leading from the vicinity of the Glacier Point Hotel southward up Illilouette Canyon to the vicinity of Old Washburn Point, and on out Illilouette Ridge. The object of this trail would be to expose some of the remarkable views on the Illilouette side of Glacier Point.

(6) Rocky Point to Yosemite Creek Bridge. At present the bridle path, which follows the river on the north side of the Valley, turns across the road at Rocky Point and continues up the Valley through Indian Village via the talus slope behind Yosemite Lodge, across Yosemite Creek, etc. An alternate has been projected that would lead from Rocky Point along the river around Leidig Meadow, to follow Yosemite Creek where it joins the Merced River and eventually rejoin the other trail in the vicinity of the Yosemite Creek motor bridge. This strip of path would be inexpensive to build and would be the outstanding bit of river and meadow trail in the Yosemite Valley with more open and superb views of Yosemite Falls, Half Dome, Sentinel Rock, and Glacier Point.

(7) Quarter Domes Trail. A scenic route for wonderful views, to which the present Clouds Rest Trail has no comparison.

(8) Trail to Mirror Lake. The object of this trail would be to (1) get the trails away from the highways and (2) expose a totally different type of talus slope than is found on the south side of the Valley. On this north talus slope, trees, shrubs, flowers, and rocks themselves are largely of a different life zone than those that are found on the south talus slope between Camp Curry and the Old Village.

(9) Pohono Trail to the Yosemite Valley via Cathedral Rocks. A trail has long been projected to follow down to the floor of the Valley from the Pohono Trail using a canyon to the east of Cathedral Spires and Rocks.

(10) Diving Board, Liberty Cap, Mt. Broderick Trail. Would make accessible three great points of interest for those climbing to the top of Nevada Fall.

(11) Glacier Point. An important essential here is the construction of a clearly defined trail circle from which trails would start. Such a circle would enable pedestrians or riders to go to this one point and pick up the trails that would lead them to the various points of interest. At the present time with the system of roads, parking areas, and footpaths at Glacier Point, it is next to impossible to direct a person accurately to the start of the Ledge Trail, Four Mile Trail, Trail to Sentinel Dome, Pohono Trail, Eleven Mile Trail, Mono Meadows Trail, or the Alder Creek Trail. A trail circle carefully designed would eliminate all this confusion.

(12) Moraine Dome. A marker on the Soda Springs trail and a footpath through the forest is needed to guide one to this great view.

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HIGH SIERRA TRAILS - TUOLUMNE REGION

In considering this area, the conception is to treat the region north of the Tuolumne River as wilderness without development of any kind except main trails which are kept passable. South of the Tuolumne, the park area is treated with the idea of providing High Sierra Camps and supply depots for hikers or riders on main trails.

Tuolumne Meadows is a logical starting point for motorists to leave cars and go into the high country of the type they choose to travel through north or south of the river.

(1) Trail Circle at Tuolumne Meadows. A circle similar to the one mentioned for Glacier Point would permit visitors at Tuolumne Meadows to go to one point of departure to pick up the trails leading out of the Tuolumne Meadows. The confusion as to the starting point for these trails at the present time is very great, and there is hardly a day in summer when riders or pedestrians are not found wandering around the meadow trying to locate a particular trail which they wish to take.

(2) Trail from Tenaya Lake to Tuolumne Meadows. At the present time riders and pedestrians wishing to go between Tuolumne Meadows and Lake Tenaya have no choice except to travel along the highway. At the rate of speed at which cars travel now this is dangerous aside from all other considerations. Even if it were safe for hikers to take to the road, this bit of new trail is justified to allow travel on foot or horse off the road.

(3) May Lake to Forsyth Pass and Merced Lake. A part of this trail already exists but a better connection should be made from May Lake to the base of the Forsyth Pass Trail. Considerable improvement work should be done on the Merced Lake end of the trail in the vicinity of Echo Creek. The value of the trail rests partly on the fact that during the period of flowers in the high country in late June or early July, the Forsyth Pass section is one of the finest exhibits in all the Park. It rests too upon the fact that it would be a fine three-day circuit by trail from the Valley to Merced Lake the first day, over Forsyth Pass to May Lake, the second, down to the floor of the Valley the third day. In recent years the Forsyth Pass route has been neglected to a large extent and the trail is in poor condition.

(4) Trail from Tuolumne Meadows to a Junction with the McGee Lake Trail. With the completion of the trail between McGee Lake and May Lake most of the pedestrian and horse traffic going around the High Sierra circuit will move from Glen Aulin via the McGee Lake Trail to May Lake, or in the reverse direction. At the junction of the May Lake and McGee Lake Trail there is a natural route which follows past two unnamed lakes, then between two domes, finally arriving at the lower end of Tuolumne Meadows. The route lies through very beautiful forest and outstanding scenery. It can be built with very little difficulty and would make an excellent route for people wishing to go directly between May Lake and Tuolumne Meadows.

(5) Young Lake to Glen Aulin. There is an old trail in existence now that connects Young Lake with Glen Aulin but it is in a bad state of repair. The trip from Tuolumne Meadows to Young Lake is one of the most interesting side trips from Tuolumne Meadows and the trail is heavily traveled.

Reconstruction of the Young Lake-Glen Aulin Trail will make an interesting circuit from Tuolumne Meadows in either direction.

(6) Tuolumne Meadows to Dana Meadows. For the same reasons that apply in the case of No. 2 (Tuolumne Meadows-Tenaya Lake Trail), a trail should be constructed up the Dana Fork, to meet the Mono Pass Trail.

With the changed conditions due to conversion of the old Tioga Road into a motor speedway and the attraction of large numbers of people to the Tuolumne Meadows, the suggested trail development of the Tuolumne area is a pressing need.

Other trails in higher regions of the Tuolumne basin are in some cases badly in need of repair. Some are said to be almost impassable for packstock. The same can be said for the May Lake-Ten Lakes Trail.

We regard the region north of the Tuolumne as a wilderness area, where main trails only should be maintained in a condition to render the region accessible. The following trail improvement would conform to that idea:

- (a) From Junction of the Pate Valley Trail to Pleasant Valley.
- (b) So-called "Golden Stairs" in Jack Main Canyon.
- (c) Trail from Seavey Pass to Wilmer Lake.
- (d) Trail connection from the Snow Lake Trail through Slide Canyon to join the Benson Lake Trail.

HIGH SIERRA TRAILS - MERCED REGION

- (7)* Extension of the Trail up the Merced River above Washburn Lake to Isberg Pass and over the Clark Range to Ottoway Creek. Some years ago construction of this trail was begun and it was completed up to the rim of the canyon, where Triple Peak Fork drops over to join the Merced, where it now dead-ends. Completion of this trail to Ottoway Creek is the most important trail development needed in Yosemite Park. It will connect the headwaters basins of the two forks of the Merced, now separated by the Clark Range, and make possible another trail circuit from Yosemite with even more attraction than the present High Sierra Camp circuit via Tuolumne Meadows. Also, it would tie in to the trail system on the west side of the Clark Range and make a favorable starting point out of both Wawona and Glacier Point for trips into the high regions. The relationship of this trail to a High Sierra Camp system will be discussed in a separate memorandum. The pass over the Clark Range between Red Peak and Merced Peak is easy, and the route on both sides is now passable for horses if the right route is taken.
- (8) Trail Connecting the Isberg Pass Trail with the John Muir Trail at Thousand Island Lake. As most of this route lies within the Sierra National Forest, coöperation of the Forest Service would be required. The trail would make accessible the North Fork of the San Joaquin and west side of the Ritter Range and would provide another fine circuit from the Yosemite Region, via the Merced Basin, Ritter Range, Donohue Pass and Tuolumne Meadows.

^{*}Construction to Isberg Pass completed, 1939. Location over Clark Range to Ottoway Creek established, 1939, and construction expected in 1940.

(9) Echo Creek to the Cathedral Pass Trail. There is an old sheepherder's trail, remnants of which can still be followed, that leads from the lower end of Long Meadow down Echo Creek gorge to Echo Valley on the present Merced Lake Trail.

HIGH SIERRA CAMP SYSTEM

The present High Sierra Camp circuit offers a fine opportunity to hiker or rider to enjoy the fine region traversed. It would be improved by one more camp situated in Little Yosemite above Nevada Fall, since the pull up to Merced Lake is considered too long by many hikers for a first day's trip. Also the camp would provide a night stopping place from which to explore the fine points of interest in that vicinity. A new route up Indian Canyon from Yosemite is needed as already noted. To develop properly the recreational facilities of the southern part of the Park and tie it into the northern circuit over proposed new trail (7), other High Sierra camps would be needed.* Another camp might be placed on Triple Peaks Fork, as the distance from Merced Lake to a High Sierra Camp at Moraine Meadows is too far for one day.

On the west side of the Clark Range locations of High Sierra Camps could be made which would tie in with winter trails for skiing and the summer camps could be planned also to be used for winter ski huts or shelters. This development for summer and winter use should greatly add to the importance of Wawona as a starting point and relieve Yosemite, especially now that the south entrance via Wawona is about to be completed.

Glacier Point is accessible by automobile. It seems logical to develop Glacier Point as another jumping off place for the High Sierra circuit as well as Wawona. Many who go to the Merced Lake Camp start from Glacier Point to avoid the heavy climb out of the Yosemite Valley to Nevada Fall. A High Sierra camp should be located on the Buena Vista Trail north of Horse Ridge. Another camp possibility exists in the vicinity of Royal Arch Lake. This lake may be the site that should be chosen as it is said to be one of the finest campsites in the Park. It will be seen that with the construction of three camps in the general vicinity of the locations mentioned, a circuit starting at Wawona could make the entire loop of camps or could merely make two or three camps in the southern section of the Park, emerging at Glacier Point if desired. From Glacier Point one could continue on around the Alder Creek Trail to Wawona and finish there if it were so desired.

Consideration should be given to the establishment of a High Sierra Camp at the Mount Lyell base. This camp would be within a day's walk of either the Tuolumne Meadows Camp or the Vogelsang Camp, which would make possible the climbing of Mount Lyell from the Lyell base camp without the necessity of providing for spending a night out. It would also permit visitors to this camp to go over Donohue Pass and back in a day, if they chose.

Finally, consideration should probably be given to the establishment of a

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^{*(1)} Vicinity of Ostrander Lake. (2) Royal Arch Lake. (3) Ottoway Creek.

camp in the Ten Lakes Basin. This camp would connect with May Lake Camp on the one side and would be a day's trip to the Valley on the other side.

WINTER SKI HUTS AND TRAILS

We believe that eventually ski trails of the Sierra will be used in winter by a substantial number of people, substituting skiing for hiking. Judging by the manner in which the sport is growing in California it does not seem too early to study the possibilities of ski touring and winter mountaineering in the Yosemite region.

To show how rapidly touring in winter is developing, the Forest Service is now engaged in working out a system of huts in the New England mountains that will form a chain for the use of winter mountaineers. In the Yosemite Park we believe that the first area to be studied for possibilities for hut touring in winter should be the area south of the Glacier Point road. Our reasons for this are as follows:

1. We already have a skiing center at Badger Pass. If and when the Glacier Point road is kept open, the present main hotel can be kept open at Glacier Point, and there can be constructed dormitories somewhere in that vicinity, and other facilities that not only can be used in winter but in summer as well. It is important in the beginning that any mountaineering in winter be located in an area that is fairly accessible to roads so that searching parties, if needed, can reach the areas with a minimum loss of time. At the present time the only area accessible by road is the area adjoining the Glacier Point-Badger Pass road. Within an hour's travel of the Glacier Point road can be found spectacular mountain skiing country, some of it timber-free. It is believed that a location can be found in the vicinity of Ostrander Lake that would serve as an ideal location for a winter hut and at the same time would serve in summer as a High Sierra Camp. The site for a High Sierra Camp discussed for the vicinity of Royal Arch Lake is also a site that is ideally suited for use as a winter hut. The same applies for the site discussed near Moraine Meadows. It is felt that winter mountaineering in this general region can be developed with a minimum of danger and difficulty.

Consideration should be given to the importance of keeping the Glacier Point road open for the safety of skiers in that region at the present time. It serves to stop skiers who get confused in their direction when descending the north slope and will prevent their becoming lost. The winter view from Glacier Point also has great attraction for park visitors.

In the region suggested as skiing area the winter trails and runs will of course not follow summer trails. The ski trails should be cleared, as are the summer trails, of brush, etc., and it is of the utmost importance that they be properly marked in winter according to the custom prevailing for ski runs. A more detailed report on winter recreation and skiing is being prepared by Bestor Robinson.

W. A. STARR, Chairman, High Sierra Trails Committee, Sierra Club.

Mountaineering Notes

THE FIRST ASCENT OF MONUMENT PEAK
BY JOHN D. MENDENHALL

Copper Mountain and its ridges sprawl over the desert of southeastern California like the palm and fingers of an upturned hand. The thumb points skyward, well deserving the name Monument Peak. It is an impressive tower when viewed from any direction, for, at a point 250 feet below the summit, the Monument is but 170 feet thick. The east side plunges downward for almost 1000 feet, and the north and south faces fall for 600 feet. The west wall is connected with Copper Mountain by means of a saddle that joins Monument Peak 250 feet below the summit. Precipitous, overhanging here and there, and evilly loose, the Monument had defied at least two attempts as 1939 drew to a close.

In common with most desert pinnacles, Monument Peak has a relatively modest elevation—only 2446 feet. However, the last 150 feet were more formidable than the average peak of five times its height. April 17, 1937, Lloyd Shaffer and I attempted the peak from the saddle. Taking the obvious—indeed, the sole practicable—route, we traversed out to the left, up into a recess, and back to the right on exposed but easy blocks. After surmounting 120 feet of moderate Class 4 climbing, I decided that the strength of the party was not equal to the task above. Lack of equipment contributed to my decision.

October of the same year witnessed an attack by a much stronger party, Robert K. Brinton and Glen Dawson, Sierra Club members from Los Angeles. Brinton covered forty feet of the bulge that had defeated our attempt. However, the looseness of the rocks supporting their pitons made further progress inadvisable.

It was a serious party that studied the west face of the Monument on the last day of 1939. Arthur B. Johnson and I shared leadership. My wife, Ruth, and Paul Estes composed the remainder of the party. Anticipating a severe battle, we carried 400 feet of rope, thirty pitons, eighteen carabiners, and four hammers.

There was little choice of routes. We were almost definitely committed to turning the loose corner of rock that had defied previous attempts. Conquering this obstacle should place us upon a ledge plastered high on the south face. Above this resting-spot reared an uninviting stretch of plates, smooth and glistening in the desert sun. However, if a frontal attack upon the slabs failed, a detour should turn the difficulty. Once above the level of the plates, an airy but relatively short ascent of loose material should bring the party to the summit.

Feeling that even unstable rock should yield a good piton-anchorage in 200 feet of rope, all four tied into one party, and the conflict began. I led out to the left, up through the recess, and upward to the right. Before long, the rope was snapped in at two pitons left by the Brinton-Dawson party, and I placed

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a third piton fifteen feet higher in the loose wall. Descending almost to the level of the shelf occupied by Art, I cautiously edged outward to the right. Every hand- and foot-hold was carefully tapped. Piton four was driven in reasonably sound rock, and I worked directly up a shallow crack to the ledge that was our first objective.

Art joined me, and the next pitch was carefully studied. After some investigation, it was decided to turn the obstacle to the left. Piton five was placed at the east end of the ledge. Secured by Paul's piton belay from the ledge, Art climbed upon my shoulders and ferreted out some hand-holds above. Climbing upward and to the left, he passed around the corner and out of sight. Following extensive "gardening," pitons six and seven were placed. Due to the hazard of falling rocks, Ruth was then brought up to the ledge.

Using Paul's back as a ladder, I was able to join Art after an airy ascent over unsound rock. A short traverse led into an inviting-looking chimney composed of reasonably dependable material. Using piton eight for sidetension, Art emerged from the head of the chimney onto a loose but welcome slope. A minute later, an exultant shout from above announced success.

Ruth gamely made the critical pitch carrying the metal-laden sack, and Paul followed, removing pitons. By two o'clock we were all upon the loose, sloping summit. The view was splendid desert scenery, embracing the lazy Colorado River, distant Arizona ranges, and the nearby cliffs of Copper Mountain.

The lengthening shadow of the Monument became a warning finger, and we roped off the west side from a piton. Due to the possibility of being stunned by loose rocks, each climber was belayed during the first rappel. Before long, the base of the tower was reached and the rope was removed. It was a happy group that descended through the darkness, but we also felt profound respect for the shaft bulking blackly in the star-studded night.

ROCK-CLIMBING IN YOSEMITE BY RICHARD M. LEONARD

Again the Memorial Day trip was a high point of 1939 Sierra climbing. Yosemite's spectacular springtime, combined with perfect weather conditions, produced a very enjoyable trip. Since the holiday was on a Tuesday, only thirty-seven rock-climbers were able to come; nevertheless, a great deal of climbing was accomplished.

Mount Starr King.—On May 28, under the generous leadership of Dorothy Markwad and John Dyer, ten members of the trip were able to enjoy the extensive view from this formerly "inaccessible" summit.

Mount Clark.—Many enjoy general mountaineering and wilder and higher country rather than pure rock-climbing in the valley. Thus on a four-day trip Lester Ferris, Ben Hall, Stephen Hall and Tom Morley ascended Mount Clark from Washburn Lake, and also reached the summit of Mount Starr King on their return.

"The Gunsight."-The lower Cathedral Rocks gully, a V-shaped notch

with the Leaning Tower centered in the sights, has been appropriately named by the Yosemite ranger staff. May 27 and 28, three parties, totaling thirteen persons, ascended to Bridalveil Creek, and three more, namely, Neil Ruge, De Witt Allen, and Ted Sanford, made the ascent of the Leaning Tower, not returning until the search party met them at the road at 10:00 P.M. On May 29 six more enjoyed this easy but sporting climb to a fine lunch spot on Bridalveil Creek.

Grizzly Peak.—On May 27 Neil Ruge with Esther and Hervey Voge, and on May 28 Tom Johnston, Don Woods, Jack Pionteki, Leslie and Fred Toby made the ascent via LeConte Gully.

Lower Brother.—May 27 De Witt Allen, George Dondero, Jim Harkins, Rus Lindsey, and Ted Sanford traversed from east to west, returning at 8:00 P.M.

"Arrowhead."—Attempted May 27 by Don Woods, Walter Hermies, and Bob Baker, who were turned back. Fourth ascent on the 28th, by Fred Kelley, the Ed Koskinens, and Ralph Yearly.

Washington Column.—Still the most popular difficult climb in the valley; the fourteenth ascent was completed this year, with five other climbs to the "Lunch Ledge," May 27, Bob Brinton, Elsie Strand, Carl P. Jensen, Agnes Fair, Spencer Austin; May 28, Dick Jones, Bob Baker, Walter Hermies; November 11, Bob Hansen, Bill Horsfall, Alan Henry, Fritz Lippmann.

Church Tower.—Having repulsed three attempts since the first ascent, in 1935, this spire yielded a second ascent on May 30 to Carl P. Jensen and Spencer Austin.

Glacier Point.—A new route, completed on the first attempt, turned out to be one of the most comfortable and enjoyable climbs in the valley. The route is up the east face, opposite Sierra Point, and follows near the first little stream south of Glacier Point. Shade, running water, and flowers are found all along the way. Climbing is on excellent granite at average angles of sixty-five to seventy degrees, mostly Class 4½ with two Class 5½ pitches. May 28, Dave Brower, Raffi Bedayan, and I made the first ascent in five hours, removing the ten pitons so that it is now just as much fun as ever.

Pulpit Rock.—First attempt 1936, by the capable climbers, Owen Williams and Ethel Mae Hill. Second attempt August 12, 1937, by the very expert team of David R. Brower and Morgan Harris. Third attempt May 27, 1939, by the still stronger party of John Dyer, David R. Brower and Richard M. Leonard. After very careful climbing for a period of five hours only sixty-three feet of climbing had been accomplished and further progress seemed impossible. It was thus conclusively established that, as the Whitney Survey would say, Pulpit Rock was "forever inaccessible."

Nevertheless, two days later, Raffi Bedayan, Carl Jensen, and Randolph May proudly brought back to camp the highest piton of the previous party. To the earlier parties it was clear that the piton could only have been removed by roping down from above it. Although they conceded this, they still refused to believe, after their own failure, that the rope-down had been preceded by an ascent. On July 4 John Dyer broke away from the doubters and claimed a second ascent with Edward Koskinen. As proof, he also exhib-

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ited the highest piton of the previous party. On November 12 Bob Hansen, Alan Henry, Fred Kelley, and Fritz Lippmann failed on the fourth attempt after some unpleasant experiences with unsound pitons.

So Brower, Harris, and Leonard still mumble and mutter about going back for a fifth attempt "to see if Pulpit Rock can be climbed."

MOUNTAINEERING DURING THE 1939 HIGH TRIP BY DAVID R. BROWER

Once again the lure of Sierran summits proved too much for High Trip mountaineers to resist, nearly 500 man-days of climbing being recorded. The mystery was removed from several of the supposedly unclimbed peaks, eight of which had apparently not been climbed before. The "Polemonium Club" held sessions in rock-climbing technique on several occasions, Jack Riegel-huth conducting classes in instruction which contributed substantially to the summer's record of safe climbing. Altogether, forty-seven peaks were climbed, of which the new and unusual ascents are as follows:

Glacier Divide: Peak 13,162.—Climbed July 3 by Jim Harkins, Fred Toby, Bert Malcolm, traversing from Peak 12,317. Found cairn. The intervening pinnacles, on which there were no records of previous ascent, were interesting but did not require rope. Peak 12,026.—Climbed July 4 by Marion Abbott and Scott Smith. Peak 12,251.—Climbed July 5 by Weldon F. Heald and Alden Smith. No record of previous ascent was found. Peak 12,866.—Heald and Smith continued from Peak 12,251 to this summit, on which they found a cairn.

Peak 12,221.—This rounded summit, E. of Pilot Knob, was climbed July 3 by Cliff Youngquist, who found no record of previous ascent.

Peak 12,200, (NW. of Mount Merriam).—Climbed July 4 by William E. Colby and Wandalee Thompson. No record of previous ascent.

Peak 12,530 (NW. of Mount Merriam).—NE. ridge climbed July 4 by Dave Brower and Jim Harkins. No record.

The Pinnacles.—The first two southerly points were climbed July 5 by Jim Harkins and L. Bruce Meyer, who found no records. They left records on the rounded summits, cairns on intervening points, and reported that the pinnacles farther N. appeared more difficult.

Mount Henry.—Climbed July 7 by Brower, Dick Cahill, Paul Chenoweth, Jerry Draper, Jim Harkins, Bert Malcolm, Norman Roth, Malcolm Smith, Keith Taylor. A cairn was found, but no other record of previous ascent. A brass-tube register was left.

Mount Darwin.—Climbed from the glacier July 9 by Bob Ratcliff and Malcolm Smith. Climbed July 10 from Evolution Lake by party of nineteen led by Norman Clyde, many of the party ascending the final summit pinnacle. Dave Brower, Madi Bacon, and Jim Harkins descended by the glacier.

The Hermit.—Climbed July 8 by party of seven led by Dick Cahill. Climbed July 10 by party of twenty-nine. Climbed July 10 by party of twenty-

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ahill. entysix, led by Muir Dawson. The third party placed a brass-tube register, cap of which was immediately lost. Northwest face.—Climbed July 9 by Harriet Parsons, Madi Bacon, Maxine Cushing. The route involved Class 3 pitches.

Peak 12,407.—Climbed July 9 by Alden Smith and Grace Nelson. No

record.

Mount McGee, southeast spire.—Climbed July 11 by Bob Ratcliff (leader), Harriet Parsons, Muriel Ratcliff, Margaret Joralemon, Penry Griffiths, Malcolm Smith. Found record of a previous ascent in 1925.

Mount Huxley.—Climbed July 11 by Dave Brower, Art Argiewicz, Maxine Cushing, Jim Harkins, Alan Hedden, Bob Jacobs, Bert Malcolm, Bruce Meyer, Norman Roth, Keith Taylor. The party climbed the W. chute, descending the SW. chute, which required one short rope-down. Only four previous ascents were recorded.

Peak 12,279.—Climbed July 11 by Jerry Draper, Rymund and Howard Wurlitzer, who found only a cairn.

North Palisade.—Climbed July 14 by party of sixteen led by Norman Clyde. The size of the party delayed the descent enough so that all could enjoy the sunset over Dusy Basin, even though this postponed dinner until 10:30 p. m.

Traverse.—Thunderbolt Peak, Northwest Peak of North Palisade, and the North Palisade were traversed from N. to S. by two ropes; Dave Brower, Bruce Meyer, Fred Toby, Harriet Parsons, Madi Bacon, Jim Harkins.

Devils Crags, east face of highest crag.—A second ascent of this route was made July 18 by two ropes: Raffi Bedayan, Jim Harkins; Dorothy Markwad, Bruce Meyer.

Mount Sill.—Climbed by party of twenty, led by Leland Curtis and Dick Cahill. A knapsack camp was established high on Glacier Creek.

Middle Palisade.—Climbed July 20 by three ropes, led respectively by Norman Clyde, Dorothy Markwad, Harriet Parsons. Climbed July 21 by three ropes led by Dick Cahill, Muir Dawson, Jim Harkins. Traverse.—Disappointment Peak and Middle Palisade were traversed S. to N. on July 20 by Dave Brower, Bruce Meyer, Keith Taylor, who continued to the deep notch N. of Middle Palisade before returning to the upper Palisade Creek camp.

The Thumb.—Climbed July 20 by Frederick R. Pond and Thomas H. Jukes, who found only Clyde's record.

Split Mountain.—Climbed July 21 and 22 by seventy-eight persons, led on respective days by H. M. Walters and Oliver Kehrlein.

"The Saddlehorn," (Peak 12,150, NE. of Mount Ruskin).—Climbed July 22 by Bruce Meyer (leader), Charlotte Mauk, and Dave Brower, who, after climbing the Class 4 E. face and arête, traversed the peak and were obliged to rope down to the S. from the W. notch. No record of previous ascent was found. Climbed July 23 by Raffi Bedayan, Alan Hedden, Barbara Norris, Anna Shinn, Keith Taylor, Mike Walters.

Peak 12,776, (SW. of Striped Mountain).—Climbed July 23 by Madi Bacon and Tom Noble. No record.

Cardinal Mountain .- Climbed July 23 by Dave Brower, Bruce Meyer,

Rymund Wurlitzer. A cairn was found, but no record, although Clyde made an ascent, probably in the early twenties. This summit should prove fascinating to geologists.

Cirque SE. of Bench Lake.—Explored July 25 by Art Argiewicz, Cyril Jobson, Dan Kauffman, Keith Taylor, Bob Wickersham, who made a second ascent of Peak 12,938, and an apparent first ascent of Peak 12,750, to the E.

Mount Wynne.—Climbed July 27 by Madi Bacon, Bob Hollis, Jean Scupham, and Bob Wickersham, as well as by Clyde's party of nineteen, who traversed from Mount Pinchot.

Colosseum Mountain.—Climbed from N. July 28 by Bruce Meyer (leader), Dave Brower, Alan Hedden, and Keith Taylor, who left a brass-tube register. Jim Harkins made the ascent earlier in the day, and saw two mountain sheep on the broad summit plateau.

CLIMBING ON THE BURRO TRIPS, 1939 By MILTON HILDERSAND

During the first of the four burro trips, four ascents were made between July 5 and 9—Mount Lyell, Donohue and Banner peaks, and Mount Ritter. Rope was used to belay beginners on Lyell, and to safeguard descent from Ritter to the Banner saddle. Rope-down practice for beginners was held on Donohue Peak.

A northern Yosemite itinerary was selected by the second-trippers. On July 20 eight persons ascended Volunteer Peak from the Rodgers Lake trail. In the next eight days ascents were made of Peak 11,000 (near Snow Lake), Slide Mountain, Peak 12,000 (S. of Whorl Mountain), Matterhorn Peak, Whorl Mountain, and Mount Conness.

Back again toward the Thousand Island Lake country went the third-trippers. On August 2, fourteen ascended Lyell, learning something of rope technique, since the entire party was belayed over the bergschrund, and many of them on the summit pitch. Seldom-climbed Mount Rodgers was ascended during a rainstorm, Banner Peak was climbed again, and two ropes of three ascended Mount Ritter from the Banner saddle, using the two chutes at the head of the largest tongue of snow. Peak 12,100 (above Alger Lake) and Blacktop Peak were ascended. Then, on August 9, Milton Hildebrand and George Templeton, Jr., made the first traverse of Koip Crest, moving from south to north, ending on Blacktop. The pinnacles of Koip Crest were Class 3, with Class 2 and 4 stretches. There is fine climbing along the crest, and many Class 5 routes could be developed. No record of previous ascent was found on the pinnacles. Rolf Ready started the traverse, but descended to camp after making the first four summits.

The final trip of the summer returned to northern Yosemite, where H. S. Kimball and Boynton Kaiser led a party of twelve up Matterhorn Peak, and Kaiser, on August 25, led a smaller party up the NW. face of Ragged Peak, an ascent involving Class 4 pitches.

THE ROCK-CLIMBERS' SECOND KNAPSACK TRIP
BY EDWARD W. KOSKINEN

On the morning of July 30 a group of ambitious rock-climbers, DeWitt Allen, Earl Jessen, David Nelson, Don M. Woods, Edward W. Koskinen, Harold H. Leich (a visitor from the Potomac Appalachian Trail Club), and trip leader David R. Brower, packed dunnage and food for a week in their knapsacks and left Onion Valley on the long climb over Kearsarge Pass. The sky was in a threatening mood, and soon carried out its threat. It rained all along the way to our Kearsarge Lakes camp, but our spirits were undampened. The next day saw everyone away from camp, climbing in dry and sunny weather. Dave Brower, Hal Leich, DeWitt Allen, and Earl Jessen climbed Mount Gould from the W., while Don Woods, Dave Nelson, and Edward Koskinen took in Kearsarge Pinnacles Eleven, Ten, Nine and Seven. Not carrying any hardware this day, they were prevented from climbing Pinnacle Eight.

The morning of the third day Ted Waller joined our group and accompanied Woods, Nelson, and Koskinen on second ascents of Kearsarge Pinnacles One and Two, and apparent first ascents of Three and Four; while DeWitt Allen, Earl Jessen and Hal Leich, starting from the NW. end, climbed Pinnacles Twelve, Eleven, Ten, Nine and Seven. Dave Brower walked to Glen Pass, where he perceived a huge pack coming up the Pass from the north. As it approached he found that there were two legs under it, and was able to identify the phenomenon as Norman Clyde, with his ninety-pound pack—at this time about fifteen pounds lighter than when he had left the Sierra Club High Trip at Woods Lake. This same afternoon Hervey Voge and Fritz Lippmann packed in over Kearsarge Pass to complete our group of eleven.

The following day we left our first camp and shouldered packs for the journey down Bubbs Creek to Junction Meadow, thence up East Creek past beautiful East Lake and up the Harrison Fork. We were showered with rain once again on the way to our second campsite, just beyond Castilleja Lake.

The next day, with weather a bit drier, saw Brower and Voge climb Ericsson Crag Number Three (the northernmost crag) using the W. gully to the notch, then traversing on and along the west side of the final arëte to make the second ascent. They then climbed Crag Two for an apparent first ascent, going up from the intervening notch by the chute just W. of the summit arête. Meanwhile Waller, Woods, and Koskinen were making a complete E. to W. traverse of "The Minster," a jagged ridge of grotesque spires extending westward from Deerhorn Mountain, finding no record of a previous ascent on any of them. Allen and Lippmann, likewise, were unable to find any record on the E. point of Deerhorn Mountain, which they climbed by the SW. chute, using their single piton and carabiner for safety a number of times in the wet gully.

The second morning at this camp found everyone active again: Nelson, Leich, and Jessen climbing Mount Ericsson from "Lucy's foot-pass"; Brower and Clyde ascending the W. face of Mount Stanford; Voge, Waller, and Lippmann going up the small crag between Mount Ericsson and Crag One;

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. S. and eak, and Allen, Woods, and Koskinen making a first ascent of Ericsson Crag Number One (the highest crag) from the SE. They found this route up Crag One to be Class 4 from the notch to the summit, twice anchoring belayers to a piton. We were soon treated to a thunder storm, the party on Crag One having to build a cairn with the summit block singing underfoot. It rained almost all through that night; Jessen and Voge were swamped under their ground sheet and had to find shelter in Brower's tent. While half the party spent the ensuing day drying out their things between, and playing cards during showers, Clyde, Voge, and Waller traversed the W. ridge of Deerhorn Mountain, crossing four minor summits on the way to the main one. Leich, Nelson, and Koskinen attacked West Spur from the SW., but were prevented from climbing the main summit by lack of time. The climbing on this day was hampered considerably by the weather, the rain necessitating the use of the rope in many places for safety, and the fog which enveloped the peaks making route-finding difficult.

Our first week at an end, Allen and Voge had to return home. DeWitt left us in the morning, and Hervey after he had climbed Ericsson Crag One with Waller and Lippmann. Brower, Woods, and Koskinen climbed Mount Ericsson from Lucy's foot-pass, while Nelson, Jessen, and Leich ascended Mount Genevra by the E. side, on the way to our Milestone Creek camp, where our second week's food had been packed in. Here we visited the Saddle Horse Trip for two days and sampled their luxurious food, in return for which we offered to lead any riders up Milestone Mountain. The only one in their party to grasp the opportunity was Mrs. Claire Ruttledge, of the Prairie Club, who made the ascent with six rock-climbers, climbing rocks and talus, glissading down snow and ice with the best of them. Clyde and Waller meanwhile ascended Thunder Mountain. The next day Clyde, Waller, Jessen, and Leich climbed Table Mountain; Lippmann, Nelson, Woods, and Koskinen made an apparent first ascent of Peak 12,492 and a second ascent of Peak 13,241.

Our next move was a short pack to Tyndall Creek, where we camped at the highest timber, SW. of Diamond Mesa. To complete the day Earl Jessen climbed Peak 13,071, east of Shepherd Pass. On our final climbing day Waller and Lippmann climbed Mount Tyndall via the SE. ridge, approaching the ridge from the E. by a Class 4 gully. Jessen, Leich, Nelson, and Koskinen climbed the same peak by the usual route from the NW. Nelson and Koskinen then traversed from Tyndall to Barnard and returned to camp via Wright Lakes Basin. Brower and Woods climbed Junction Peak from Forester Pass, traversing Diamond Mesa on the way back. On the Mesa they found what appeared to be mountain sheep tracks, and, although it was August of a dry year, a meadow and stream.

On our way out over Shepherd Pass we dropped packs at Shepherd Pass, while the whole party climbed Mount Williamson by the SW. arête, and descended by the northernmost W. chute, Norman Clyde leading. From the summit we lazily enjoyed a last view of the magnificent Sierra that now felt

like home to us.

Our final campfire on Shepherd Creek was unique. The embers had cooled

to a deep red when we noticed a deeper hue in the eastern and northern sky. The aurora borealis had ventured south to give us a colorful finis to our glorious two weeks' outing!

SOME STERRA AND DESERT CLIMBS OF 1939 BY CHESTER VERSTERG

Telescope Peak (11,145).—The Club register box for Telescope Peak was placed April 22 by Leland P. Chase, Bill Roberts, Bob Rumohr, and Chester Versteeg (leader). The last two miles of trail from the saddle above Wildrose Canyon and the steep northeast arête were covered with heavy snow. A party of the Ski-Mountaineers had attempted to place the register on New Year's Day, when one climber reached the top; but the register was in another ruck-sack, a mile from the summit.

White Mountain Peak (14,242).—In two and a half climbing days (May 28-30) a traverse from the S. and down the W. was made by Bill Crookston, Bill Roberts, Bob Rumohr, John Wiggenhorn, and Chester Versteeg (leader). They drove up Wyman Creek from Deep Springs Valley to an elevation of 8800 feet near Cedar Spring, finding the road in very poor condition. Traveling N. the next day on a fairly distinct trail the party camped at timberline (11,000 feet), climbing Sheep Mountain (12,487) before dark, finding only the benchmark as a record of prior ascent.

The following day, the men soon encountered snow, through which they waded nearly eight miles. Packs averaged about thirty pounds, and the climbers sank ankle-deep at every step, knee-deep hundreds of times, frequently hip-deep. Within three miles of the summit it snowed for two hours, but cleared as the top was reached. The party was far behind schedule, reaching the summit at 5:10. Storm clouds along the Sierra lifted just enough to give them one of the grandest views on the North American Continent. The climbers descended the N. slope of the summit for 100 yards, then turned abruptly W., traversing downward along exceedingly steep snowbanks, breaking through the soft snow at nearly every step. Unfortunately the party carried neither ice-ax nor rope, as such heavy snows were not anticipated. The first mile and a half of the return route, across two arêtes and half a mile of steep talus slope, was unknown to any member of the party. Then the route continued along an easy ridge, and up the N. face of and along a knife-edge for a quarter of a mile. After some simple rock work along the top of a mile-long ridge, descent of a 1200-foot talus slope, then 1000 feet more to a simple camp at timberline, they could see the cheering lights of the famous sillimanite "Sparkplug Mine," 2000 feet below. All agreed upon arrival at camp at 10:30 that this was the hardest day's climb in their lives. Crookston, who had climbed the N. side of Rainier, and has since made the ascent of Ixtaccihuatl with Braeme Gigas, still affirms this fact.

If you climb White Mountain Peak from the west, I advise a time between July I and November 1. The only water available is the constant spring above the mine. The month of July is best for the much longer southern

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route. Before July there is too much snow to wade through; after July there are no melting snowbanks to supply water between Cedar Spring and the only constant spring on the route, at McAfee Meadows.

The following peaks, unless otherwise designated, I climbed solo.

Peak 12,903.—The first ascent of the highest summit was made July 12.
Clyde climbed the lower, but more difficult, western summit and left a cairn there in 1936.

Peak 12,629.—Climbed July 14. Class 2 near summit, via SE. ridge. Found cairn and stick with piece of torn towel attached, but no record.

Mt. Goode.—Climbed July 16. Class 2 near summit, via SE. face. Found only a cairn there, probably left by Clyde.

Chocolate Peak.—Climbed July 16. Found no record, but am sure has been climbed a number of times. Built cairn and left record. A second recorded ascent was made by Betty Versteeg and Nancy Barry, on August 5.

Table Mountain (11,707).—Highest summit between Middle and South forks of Bishop Creek. Climbed July 20 by Nancy Barry, Betty Versteeg, Janice Versteeg, and I, the climb being Class 2 near the top. This was the third recorded ascent.

Peak 11,257, (above Lake Sabrina).—Climbed July 21. First recorded ascent.

Peak 12,993.—Climbed July 24. A Class 2 climb via E. arête. Only record in cairn at benchmark was Norman Clyde's in 1931.

Peak 13,029.—Climbed July 24. Apparently a first ascent.

Peak 12,378.—August 2. A second ascent, first ascent having been made by A. H. Blake on September 14, 1938. I transferred Blake's record from its oiled paper cover to a light register tube.

FIRST WINTER ASCENT OF BANNER PEAK By CHESTER L. ERRETT

Having been turned back by a blinding blizzard during a previous winter attempt on Banner Peak (12,957), I had visions of another defeat as Bob Brinton, Lloyd Warner, and I reached Silver Lake on February 28, 1939; for we were greeted by a wind that had steadily increased, and was now a gale. Knowing that, during March, Sierra weather can change rapidly, we hoped that it would, and climbed the two miles to Gem Lake that afternoon. The next morning we were on our way before sunrise on a beautiful day. With thirty-five pound packs we crossed the lower end of Gem Lake and, climbing over Agnew Pass, reached Thousand Island Lake before noon. Leaving our packs at the upper end of the lake we continued toward the Ritter-Banner saddle. The long snow couloir leading to the saddle was hard-packed and covered with sastrugi—miniature craters formed in wind-packed powder. From the saddle further progress on skis was prevented by covered rocks. We left our skis and continued on foot, reaching the summit at four o'clock, the weather still clear and calm.

Four o'clock in March is quite late to be on top of any peak in the Sierra, so we started down without wasting too much time. Skiing down over the "craters" of the couloir was quite interesting, and by the time we reached our packs it was nearly six o'clock. As we had covered about fourteen miles and climbed a total of nearly 5000 feet in altitude, we were ready to set up our tent on the snow covered lake shore and proceed to fix supper.

Now on most mountaineering trips the difficulties and exciting incidents occur on the way up, but not on this one. We waited until supper. Our borrowed primus stove leaked, and even with continuous pumping took an hour to generate enough heat to cook with. Meanwhile the thermometer dropped to zero. Hot soup and tea warmed us enough so that we could take off our boots and set them just outside our three-man tent—our greatest mistake. The weather was still calm, cloudless, and cold. At midnight, the last reading we took, the thermometer read nine below zero. Nevertheless we were quite comfortable in our down bags, sleeping soundly.

At four in the morning the weather changed and by daylight turned to a blizzard, with visibility less than a hundred yards. An empty primus and exhausted fuel supply made our position serious enough, but when we reached for our boots and found them full of snow, with half an inch of ice in the bottom, we realized our mistake. In our cramped quarters we each set about trying to chisel the ice out of our boots with a teaspoon. An hour later, after a breakfast of about three ounces of frozen canned fruit, we left the lake and had skied out of the storm in about three miles. We reached the car about 2:00 P. M., none the worse, but wiser for our experience. Next time we will sleep with our boots on.

CLIMBS ON MORO ROCK BY CARL P. JENSEN

At a 1936 practice climb on the summit of Moro Rock, in Sequoia National Park, Jules Eichorn told me that he believed the rock could somehow be climbed from the base; but not until a short while before last Labor Day did Arthur B. Johnson and Howard Koster agree to make up the party. We chose to reach the base of the rock by descending from the Crescent Meadow highway via the steep gully at the E. side of the rock. As we neared the lowest point of the base, it appeared that our attack had best be made through a broken-up, tree-covered face there. Howard led first, and brought the party to an inclined, half-open chimney, where Art then took over, and brought us up this Class 4 pitch, to a broad, brush-covered, sloping ledge. The rock directly ahead rose perpendicularly for many hundred feet, with smooth surface and many overhangs, so we continued easily to the left for quite a distance, to what might be termed the "corner" of the rock. While lunching at this point, and looking downward toward Hospital Rock, we saw what would have been a technically less difficult approach to that spot, by a route in full view of the auto road. There was also a cairn a short way down, but it contained no identifying information.

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Then the climb was resumed and I led the more nearly vertical portion of the climb, and the summit pitches. Before long we encountered two perpendicular walls at right angles, on the left one of which there were two protruding knobs, each roughly two inches in diameter, and to the left of them a narrow, vertical, dirt-filled crack, with a bush at the top. By swinging from the knobs, the leader placed pitons for direct aid, and the bush twenty feet above was reached, penetrated, and sat on. After recovering from this exertion, the lead was pushed up a series of inclined V-cracks, and to the left around a broad ledge to a point where it ended. Starting there from a twoman stand, and climbing thirty feet on small protuberances on a seventydegree face, a belay-point was conveniently reached. From here a very narrow ledge led to the left about twenty feet, and second pitch was climbed on similar knobs to a belay point. Proceeding then up an open crack, and around to the right of a large rock mass, we came in view of that portion of the rock on which the practice climb had been held three years before, and knew that our difficulties were for the most part over.

The second day Howard and I were joined by Elsie Strand for a try at a west-face route. Our intention was to ascend as near the middle as possible, but difficulties forced us to bear continually to the left until within a short distance of the railing and cement stairs. With Howard leading, we traversed to the right and up to a point just under the actual summit, then climbed to the top. A large gallery had gathered to watch us, and a similar group assembled the following day when we returned to photograph the route. We recommend this last portion as an exceptionally interesting route for adequately trained rock-climbers visiting the Park.

STRAWBERRY PEAK CLIMBS BY JOHN D. MENDENHALL

Strawberry Peak is a diorite-granite mountain rising to an elevation of 6150 feet, north of the Angeles Crest Highway. The north face drops down to the Big Tejunga Canyon in an impressive cliff over 400 feet in height. Due to the variety of rock, the rather high angle, and the proximity of the region to Los Angeles, the north wall should prove to be popular with climbers. The rock ranges from massive diorite that refuses to accept pitons to decomposed granite. In general, the wedging action of pitons must be employed with discretion, for brittleness is a characteristic exhibited by much of the wall. The longest and finest ascent is the delicate "Tiptoe Traverse," (Class 4). The first successful attack was made by Ruth and John D. Mendenhall, and Wilbur Johnson in 1939. Another route is the "Strawberry Roam," winding up the western portion of the face. An attempt to link the black buttress with the crest of the cliffs was defeated by ice and unsound rock. This should be a pleasant climb, when completed. Much of the rock is to be regarded with suspicion. Accordingly, the north wall provides good training for major peaks.

MOUNT WHITNEY FROM PINNACLE RIDGE BY RUTH AND JOHN D. MENDENHALL

We left our camp at Mirror Lake at 7 a.m., September 3, 1939, and proceeded to the point where Pinnacle Ridge abuts the eastern cliffs of Mount Whitney. Easy climbing placed us in the gully to our left, between Days Needle and the needle to the south, where we roped up at ten o'clock. About halfway up, we found ourselves in a deep, cold chimney, where a great black overhang shaded a pyramid of old snow. Further upward progress looked unpromising, but a short, delicate traverse on the north wall of the gully placed us where the ascent could be resumed. This traverse was moderate Class 5, and two pitons were employed for safety.

En route, it was possible to exchange calls with other Southern Chapter R. C. S. climbers spread like little black flies up the improbable-looking Sunshine-Peewee and Fresh Air routes of Mount Whitney. Our ascent led directly up to the notch, and a trudge over the summit slabs brought us to the top of Whitney about I:30 P. M., in time for a second lunch with the early arrivals from the other routes. A long plod down the bleak trail returned us to camp by dark. The new Pinnacle Ridge route is the most accessible climb up Whitney's East Face, and is to be recommended for able parties.

THREE MONTHS ALONG THE CREST By Jace W. Sturgeon

During the summer of 1939 I planned a ninety-six-day back-packing tour along the Sierra crest between Olancha and Tioga passes, intending to traverse the High Sierra from south to north, remaining above the 10,000-foot contour. A food cache was deposited in the higher reaches of Shepherd Creek, and descents for restocking were made to Onion Valley and South Lake. Except for these descents only a heavy pack and the precipitous section north of Mount Abbot prevented maintaining the desired altitude for the two and one half months of travel between Olancha Pass and my arrival at Mammoth Pass.

The season, of course, was exceptionally dry, and the early part of July seemed fully as advanced as late August of an average summer. September in the Yosemite region was accompanied by dry stream-beds, reduced lake levels, grass that had turned, and unseasonal weather. During the summer Sierra weather was quite different from what previous experience had led me to expect. After three weeks of dazzling and all but cloudless days in June and early July, the weather distinctly inclined toward the stormy side. In fact, the thirteen days elapsing while I traveled from Kearsarge Pass to South Lake provided a period of almost ceaseless downpour, without the "conventional" let-up and dispersal that usually precedes sundown.

I was surprised at the frequency with which I met fellow travelers along the high route I followed when crossing trailed areas, and equally surprised to note that throughout the summer I encountered no one when traveling

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across country. During the early stages of the trip as many as nine days elapsed without my meeting anyone.

Except for his descents for food, and a slight detour in the Abbot region, Jack Sturgeon succeeded in his intention to remain above 10,000 feet while

Jack Sturgeon succeeded in his intention to remain above 10,000 feet while traveling the length of the High Sierra. Quite contrary to his plans, he succeeded in climbing more than 100 peaks, easily exceeding the number ever previously climbed by one person in a single summer—perhaps more than any other climber of nineteen years will care to undertake for some time. He was prevailed upon to furnish the Committee on Mountain Records with a complete account of his climbs, and his carefully prepared notes on unusual ascents and summit records of peaks that were supposedly unclimbed.

Sturgeon climbed all of the 14,000-foot peaks of the Sierra, including Peak 14,211, the comparatively difficult east summit of Williamson. He ascended forty-seven 13,000-foot peaks. His ascent was among the first five to have been recorded on forty-seven summits, the first to have been recorded on eleven of these, as follows:

Peak 13,028 Peak 12,800 (near Black Giant)
(SE. of Lake South America) Peak 12,700 (SE. of Muir Pass)
Peak 12,100 Peak 12,800 (W. of Muir Pass)
(SW. of Mount Johnson) Peak 13,000 (E. of Mount Goddard)
Peak 12,700 Peak 12,000 (E. of Ireland Lake)
(SW. of Mount Gilbert) Peak 12,000 (N. of Mount Gould)
(Elevations in round figures are approximate)

Proper cataloging of the detailed information concerning the peaks upon which the complete report has been made will occupy the Mountain Records Committee for some time. Meanwhile its members may marvel at two facts: Sturgeon managed to ascend a Class 5 climb by himself; he has since, however, lost enthusiasm for such ventures. Second cause for wonder is his record for August 16, when he was in the vicinity of Muir Pass. On that day he climbed nine peaks!—D. R. B.

A FIRST ASCENT ON THE MACHETE By ROBIN A. HANSEN

Since 1933 the High Peaks of Pinnacles National Monument, near Hollister, have proven to be a fine climbing site for the Bay Chapter Rock-Climbing Section. Chimneys, domes, and faces of unsound, lichen-covered breccia have provided a type of climbing different from the firm rock of Bay Region localities. Advanced rope and piton technique has permitted many new ascents to be made with safety; all of them, however, consisted of but a few short pitches. Recently our attention was focused on the Big Pinnacles, in the

canyon northwest of Hawkins Peak. Climax of these, and towering 600 feet above the canyon floor, is the knife-like ridge of the Machete, a sharp arête 2000 feet long. The traverse of this arête to the unclimbed north peak has, we learned, long been considered the outstanding problem of the region.

During the first two months of 1940 John Dyer, Thomas Rixon, and I made three attempts. On our first trip, late in January, we soon found that we could proceed only by use of expansion bolts, or, as John aptly termed them, "breccia pitons." By using one bolt for safety, we covered two-thirds of the arête in six hours, being stopped by lack of time. A rope-down to the canyon floor being out of the question, we had to allow ample time for the return along the knife-edge. Two weeks later we made a second attempt, placed three more expansion bolts for safety, but were able to gain only twelve feet.

The following Sunday, February 11, we returned for another try, armed with thirteen expansion bolts, three rock drills, several pitons, and two quarts of grapefruit juice. At eight o'clock we roped up, and were soon over the easier pitches-a face climb and several Class 3 walks along the arête. Again we made a delicate traverse around the bulging shoulder of a small gendarme. More ridge-traversing brought us to a mechanic's delight-a 120-foot ropedown from two expansion bolts to the base of the first of the three towers guarding the arête. The doubled rope was to serve not only for a descent, but as an upper belay on our return. Ascent of the first tower was much easier than it had appeared. The tower evened matters, however, when we descended the other side; for what we had thought would be a simple glissade turned out to be a complicated back-and-knee struggle, with no support for either back or knee. This widened into a gully, the only holds in which would break off under the slightest weight, and we were forced to descend wet moss, using friction. Ahead of us soared the second tower. From our previous attempts and observations we knew this would be the crux of the climb. A week before, Dyer had placed an expansion bolt twelve feet above the base. With this as protection Rixon worked slowly to the left of it, and directly below a slight overhang. Standing on an eighty-degree "shelf" he groped among the lichens for a solid hold that would enable him to pull himself up the overhang. He apparently found it, for he was soon precariously perched ten feet higher, drilling a hole for another expansion bolt. Forty-five minutes later he was atop and astride the tower, with hundreds of feet of space under each foot. Cautiously proceeding along the sharpest part of the arête yet traversed, we reached the base of the north and final tower. The climb to the detached summit block was just an exposed scramble. Here at last we could use a piton-to anchor the register.

The uninterrupted height of the walls of the arête prevented our roping down, and we had to face the arduous return. When we had again reached our Class 3 walks along the arête, we made a surprising discovery. What had been a terrifyingly sharp knife-edge was now robbed of its terrors and dulled by our many hours of contact with it. It was now just a "boulevard in lichen-land."

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Book Reviews

K2¹ With the first American attempt upon K2, 28,250 feet in elevation and the second highest peak in the world, the 1938 expedition accomplished with full regard for traditional American standards of safety one of the finest examples of mountaineering the world has ever known. Although they had never seen the region, they did have the excellent maps of the expedition of the Duke of the Abruzzi upon which to base their explorations. Nevertheless, the highest point ever reached by the Duke was 6000 feet below the summit; thus, it was necessary for them to carry out a complete reconnaissance of all the great faces and ridges of the mountain which were available from their approach. This they accomplished with such thoroughness that after deciding upon the most favorable route they were able to carry their attack to the base of the summit cone at 26,000 feet, nearly five miles high.

The book, as well as the climb, is the result of the joint efforts of a team; it is well written and interesting throughout. Unfortunately, the novelty of travel in India brings on the usual fault that nearly half the book is required for the approach to the base camp at the foot of the mountain. Other features of the book so far outweigh this, however, that it may be considered one of the finest of modern mountaineering books.

Instead of having to try to remember that the map of the region is lost on a page somewhere in the interior of the book, the reader will find that maps of India, of the approach from Srinagar, and of Baltoro Glacier are easily accessible on the inside covers and flyleaves. The photographs and drawings throughout are well chosen and of excellent interest. Another feature of considerable help is the separation into appendices of certain matters of detail which would otherwise mar the interest and continuity of the story. These consist of history, a chronological summary of the trip, equipment, financial accounts, food, transport, and weather. The discussion of equipment is excellent, although it is unfortunate that twelve-pound tents were taken when Bestor Robinson's three-pound tent was already well known.

Achievement with safety should be the ideal of mountaineering, rather than abstract theories as to whether it is not more "sporting" to subject one's party to risk by refusing the protection of modern technique. Although the party did not quite reach the summit, their example of safety and judgment in mountaineering is something of which Americans can well be proud. At their highest point, they had good weather and enough of a reserve to take a chance; nevertheless, they retreated on time and in good order. In closing the book, they wrote, "Behind us were unforgettable days — days on the march, and days on the peak, whose memories we would not exchange for anything. No harm had come to us or to any of our helpers." If only the same could be said of all expeditions to great mountains!

RICHARD M. LEONARD

¹ Five Miles High. Edited by Robert H. Bates. Dodd, Mead & Company, New York.
1939. 381+xii pages, 37 photographs, chart and maps. Price, \$4.00.

To Hidden

Peak*

est of all mountain ranges, the Himalaya, are born of snow and ice, requiring heroic struggle against avalanche and ice cliff. On Hidden Peak, 26,470-foot giant of the Karakorum, a different problem confronts the mountaineer—a problem in rock-climbing that would be serious even in the low altitudes of the Alps.

Entering the Karakorum Range along the chaotic corridor of the Baltoro Glacier, members of the French Himalayan Expedition of 1936 found themselves beneath a rocky buttress 6000 feet high. Above the buttress, and up a comparatively easy 3500 feet of snow and ice, the route led to the summit of the eleventh highest mountain of the Himalaya. The buttress was a serious obstacle. Camps must be established on tiny rocky shelves, safety must be provided for the corps of native porters who were unaccustomed to the intricacies of Class 5 climbs.

There had been obstacles before: organization of a French party, selection of a desirable "eight-thousander," raising of nearly a million francs to finance the expedition. There were porter problems, too. At one time during the approach from India 950 porters could have been used, and many loads had to be left behind when the countryside failed to produce that many. So the buttress was attacked with the same determination that had beaten previous obstacles. Camps were equipped with radios, the cliffs were strung with pitons and fixed rope—2000 feet of it—in the interest of porter safety. Finally the snow slopes were reached, victory was in sight—then was hurriedly snatched away by the early arrival of the dreaded monsoon.

The story is told by various members of the expedition, with a varied style that enhances the interest of the book. It is perhaps unfortunate that the climax of the story—victory over the buttress, defeat by the monsoon—is twice told, losing much of its drama in the repetition. Coherence of the book suffers somewhat through overindulgence in the various diaries. Intraparty criticism might well have been omitted. But we are grateful for the Himalayan reference book that is presented. The complete chapter on equipment will provide meat for many a discussion. The photographs are good. But best of all is the sincere account of a valiant attempt, by mountaines who remembered the first rule of mountaineering—to turn back when safety says so.

DAYD R. BROWER

FRONTIERS OF TIBET

AND NEPAL³

Not so many years ago there was but one answer to this question. It was an answer given during the British reconnaissance of the Everest region, where predilections established in

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² Himalayan Assault. By members of the French Himalayan Expedition 1936. Translated by Nea E. Morin. Methuen & Co. Ltd., London. 1938. xv+202 pages, 48 gravure plates, 3 maps. Price, 15s.

⁸ The Throne of the Gods. By Arnold Heim and August Gansser. Translated from the original German by Eden and Cedar Paul. The Macmillan Company, New York. 1939. xxv+233 pages. 18 sketches, 220 photographs, panoramic sketches and photographs, map in pocket. Price, \$5.00.

early African safari prescribed that Himalayan expeditions should be fully as large, should provide as many of the comforts of home. Porters—hundreds of them, elaborate equipment, tinned fancy foods, even bottled beer—these were the necessary impedimenta for exploits among the highest peaks. Then—

The scene did not change, but the actors did. Based on Terris Moore's experiences in Alaskan exploration, Moore, Burdsall, and Emmons had the audacity to climb Minya Konka, then the second highest summit yet attained, with a very minimum of native assistance. Tilman and Shipton took the cue, lived almost entirely on the country as they traced a route up the tremendous Rishi Gorge to the foot of Nanda Devi. Another year, and the ascent of Nanda Devi itself was a testimonial to the advantages of small parties, to the willingness of a mountaineer to do much of his own back-packing. The 1938 attempt on K2 is the most recent achievement of the small expedition.

Was a small expedition the final answer? Not yet. Success had crowned mountaineering attempts. How about exploration, where, perhaps, greater

distances must be covered?

Dr. Heim, leading geologist of Switzerland, took command of a small Swiss expedition to find out. With August Gansser as the only other European, and a minimum of porters, he followed geological pursuits through little known, or even unknown terrain in the Central Himalaya.

The story of the expedition does not pack the drama of an attack on some defiant summit. It does not follow the moving fiction-pattern of books on Himalayan mountaineering. It does not purport to. Throne of the Gods is the detailed account of the regions between the peaks, the flowers, the wildlife, the forest and desert, the living glaciers, the stolid people, the story of the travail of the earth in producing the great Himalaya. As the narrative progresses one becomes aware of a singular truth. Such careful observation would never have been possible had the scientists been surrounded by three or four hundred porters. One is impressed by the new aspect of the Himalaya that is portrayed—a titanic uplift that is not forbidding, but fascinating. Dr. Heim appraises the small expedition at some length, concluding:

If we ever return to the Himalayas we shall . . . live as simply as we did during the last two months, when we got by comfortably with eight porters instead of thirty.

A criticism that fits many mountaineering books fits this. The predominant tendency is to rely upon what has already been written in the day-by-day diary, and this all too often is a methodical procession of words and deeds that are of only transitory importance. Diaries of mountaineers should be placed in the custody of historical societies, at least until after publication of the related book or books.

There is another criticism that fits many recent mountaineering books, and that is of the photography reproduced therein. Before the lens of the mountaineer pass the most startling and dramatic of all landscapes. The beauty of the mountain scene is self-proven. But from the book of the mountaineer how infinitesimal a portion of that grandeur is reflected! Photography has made great strides, hand-in-hand with printed reproduction. But many

mountaineers seem still to be carrying box cameras, the blurred, ill-composed products of which are included in books as an afterthought, seemingly, of the publishers.

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Throne of the Gods is the happy exception. The photographs are beautiful, in subject matter, composition, reproduction—truly, mountain photography at its best.

DAVID R. BROWER

Having been associated nearly a score of years with the AN ALBUM OF American Civic Association and its successor, the Ameri-NATIONAL PARKS4 can Planning and Civic Association, Harlean James is well qualified to tell the story of the historical development and administration of the national parks. In addition, she heightens the desire, in those naturally drawn to the more accessible parks, to go beyond the beaten path and to find there the peace and beauty of the wilderness. She has made free use of John Muir's writings in presenting the scenic beauties and points of interest of each national park and monument. Many of the photographs, which effectively illustrate the book, are the work of various members of the Sierra Club, some of the plates having appeared in the Sierra Club Bulletin. Of equal beauty are plates furnished by the American Forestry Association, Appalachian Mountain Club, American Society of Landscape Architects, and the American Planning and Civic Association.

DEATH VALLEY: While this guide to Death Valley does not attain the litA GUIDE⁵ erary excellence of other books on the region, particularly
Aubrey Drury's California, An Intimate Guide, this volume
does provide information on specific tours, with a tour key-map, which
should encourage leaving the main, traveled highways to explore, or, to use
a milder expression, just visit, more of the points of historical and scenic
interest. There are brief chapters on Death Valley geology, climate, flora,
fauna, and history, which serve as a fine introduction to the more specific
travel information that follows. The photographs are superb, and, except
that they are not in color, bring out the diversified appeal of our largest
National Monument. Indeed, in area it is second only to Yellowstone among
our national preserves.

James H. Barbour

NATURE'S On first reading Professor Medsger's book, one has the feel-WILD MENU⁶ ing that the woods are full of delicious edible fruits, foliage, and roots. Particularly impressive are descriptions of luscious

^{*}Romance of the National Parks. By Harlean James. The Macmillan Company, New York. 1939. xiv+240 pages. 123 photographs, map. Price, \$3.00.

One of the American Guide Series prepared by the Federal Writers' Project of the Writer Progress Administration of Northern California. Houghton Mifflin Co., Boston. 1939. 75-4-xp pages. Many illustrations. Price, \$1.00.

⁶ Edible Wild Plants. By Oliver Perry Medsger. Introduction by Ernest Thompson Seton. The Macmillan Company, New York. 1939. 234 pages. Many illustrations. Price, \$3.50.

wild strawberries and blackberries. One should exercise a little caution, however, unless he is a botanist. There are many plants which could be eaten as a last resort to avoid starvation, but whose palatableness is doubtful, and whose nutritive value has not yet been determined. This is essentially a book about eastern plants, which are discussed in interesting and considerable detail, from habitat to preparation as food. Many western plants are described, but usually less fully, and not from firsthand experience, Harvey M. Hall and Charles F. Saunders being frequently quoted.

The index gives scientific and common names of plants, chief characteristics, range, season, and makes it simple to find the information available on any particular plant. There is interesting description of plants used for food, beverages, and seasoning by Indians and early settlers. Those that sound really delicious would be worth trying. A few substitutes mentioned for tea are yerba buena, Micromeria chamissonis, Douglas fir, Pseudotsuga Taxifolia, bird's-foot fern, Pellaea ornithopus. For a lemonade substitute try the lemonade berry, Rhus integrifolia. Don't blame me if you don't like them!

NOCTURNAL WILDLIFE
The story of the nocturnal activities of the various
PHOTOGRAPHY
wild creatures of the United States in picture and in
prose. The book is interesting reading throughout,
and contains endless information on the habits of wild animals, as well as

and contains endless information on the habits of wild animals, as well as notes on methods and equipment used to portray their nightly wanderings. The "Eyes in the Night" range from the tiny ones of the slim shrew to the large ones of the lordly moose. Each species presented special problems to the photographer, and Tappan Gregory's accounts of his hopes, disappointments, and realizations are told simply and entertainingly. The author closes his book with a chapter on the technique of stalking and placement of the camera; and another chapter describing in full the cameras, flash guns, wire trips, and homemade gadgets he used.

RICHARD G. JOHNSON

DARTMOUTH BOOK OF The vogue for skiing, which has arisen in this country WINTER SPORTS in the last decade, has tended to push the other winter sports into the background. Mr. Putnam, primarily a speed-skater, has set about to redress the balance. Following eight chapters on skiing by Walter Prager, ski coach at Dartmouth, he treats us to seven on skating by himself and his former team-mate, Dwight Parkinson. In addition to these two main parts there is an introduction giving, in as handy form as I have seen it, the history of winter sports at Dartmouth. There are chapters on winter carnivals in general and on Dartmouth's in particular; on snow sculpture — no minor art, as anyone who has ever been in Hanover around

⁸ Eyes in the Night. By Tappan Gregory. Thomas Y. Crowell Co., New York. 1939. xi+243 pages, illustrations. Price, \$3.50.

⁸ The Dartmouth Book of Winter Sports. Edited by Harold Putnam for the Dartmouth Outing Club. A. S. Barnes & Company, New York. xvii+315 pages. Illustrations. Price, \$3.00.

the first of February can testify; on winter camping and mountaineering; and finally, on the saga of the Dartmouth men from Chile to Jotunheim.

As a book calculated to bring tears of joy to the eyes of the old grad it is a masterpiece. Fortunately, from the point of view of the public, its scope is a good deal larger than that. The articles are clear, concise, and, for the most part, well written. The Dartmouth Book of Winter Sports will not only instruct the public in technique, but will convey some of the color of the traditions, built up in one of the older winter-recreation centers, of two of our most magnificent sports.

A. C. Gerould

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SKIING WITH For those interested more in skiing than in Dartmouth winter sports, the publishers of the Dartmouth Book of Winter Sports have published the skiing portion of that work as a separate book. The chapters on training, equipment, technique, touring, racing, and jumping are succinctly yet humorously written. A little more emphasis on counterswing in turns might have been helpful, but the skier will nevertheless find all the vital information he needs, and will joyfully find that it is not hopelessly buried in words. Photographs are more decorative than functional, but this well written text does not require an illustration for every maneuver.

D. R. B.

SKIING WITH Fully as recurrent as the winter solstice are new books on SCHNIEBS10 ski-technique. One need only peruse a few of them to suspect that the teacher-authors are finding it increasingly difficult to say anything new. In American Skiing, however, Otto Schniebs has ascended beyond the discussion of mere technique, and has taken us to the land of the ski-tourer, where that technique becomes functional, transcending formation of tread-mill habits on practice slopes. This book gives some cause for regret. Whatever quality the original photographs might have had, as well as readability of text, has vanished in the dead, green ink with which illustrations and type are printed. Moreover, it is rather presumptuous to claim that there is but one American Ski School, when skiing and improvement of technique is flourishing fully as well in almost all ski schools on the continent. Readers who, led on by book-jacket claims, search for first aid and ski-mountaineering that "are thoroughly covered in this book" will be disappointed. First aid is hardly mentioned. All of the "ski-mountaineering" takes place from a mountain cabin; means of camping on snow are not considered. The attempt to produce a comprehensive book has resulted in many subjects being opened for discussion, then left uncovered.

Skiers will nevertheless enjoy reading a book written by a man who really loves the winter mountain scene. If the stories, instruction, and pictures

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⁹ Skiing, By Walter Prager. A. S. Barnes and Co., New York. 1939. 92 pages, illustrated with photographs and line drawings. Price, \$1.00.

¹⁰ American Skiing. By Otto Eugene Schniebs. E. P. Dutton and Co., Inc. 1939.
232 pages, profusely illustrated. Price, \$3.50.

tend to show skiers how to handle themselves, and to lead them to the joys and thrills that are beyond the beaten slopes, we are certain that Otto Schniebs will be well satisfied.

D. R. B.

IDAHO

As indicated in the introduction by Friedl Pfeifer, The Sun SEISCENES¹¹

Valley Ski Book does not profess to be other than a picture book of skiing in its various phases, as typified and culminated at Sun Valley and the vicinity. Pfeifer remarks, "What the skier asks in the first place is enough snow, sun, and uphill transportation"; adding happily, "Here we have them all . . ." It is too bad that the illustrations, which are the book, and which should prove this contention at a glance, are so poorly reproduced that they almost disprove it. The life, action and beauty actually and potentially there, as we all know, are disguised by the lack of clarity in the photographs, and the result is very disappointing.

HARRIET T. PARSONS

AN UNRELIABLE Ponderous volumes on ski-technique have been racing off Handbook 12 the presses. Here is a breathing spell. Instructor Max Barsis has found the skiophytes in this, his adopted country, not exasperating, but a constant source of amusement. His line drawings may resemble doodlings on a phone-booth wall more than art, but they capture most expertly the fun that goes with skis. Cartoon captions supply the only text. Of course, we hesitate to admit that we ski ourselves as others see us, but a glance in the Barsis mirror won't do any harm.

D. R. B.

¹¹ The Sun Valley Ski Book. Edited by Friedl Pfeifer, Head Instructor Sun Valley Ski School. A. S. Barnes and Company, New York. 1939. Price, \$2.50.

²³ Bottoms Up: An Unreliable Handbook for Skiers. By Max Barsis. Stephen Daye Press, Brattleboro, Vermont. 1939. 96 pages. Price, \$1.50.

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